NORTH CAROLINA Medical Journal

Vol. 16 No. 7
July, 1955

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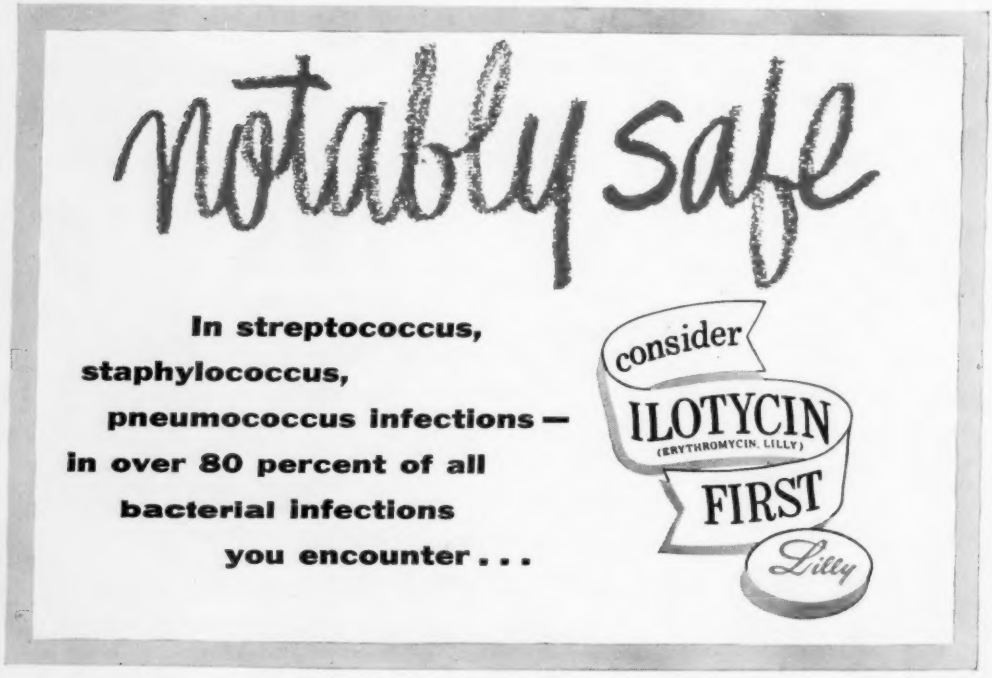
ACTIVITY OF THE CEREBRAL CORTEX IN PRIMATES
— MARION HINES, M.D.



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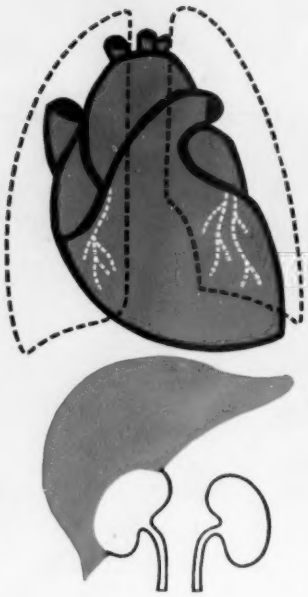

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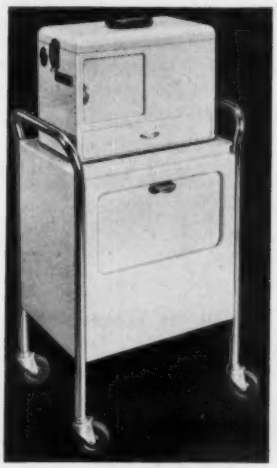

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DR. SAMUEL A. LEVINE, of HARVARD MEDICAL SCHOOL, a nationally known cardiologist, recently spoke at a meeting of the JOHN A. ANDREWS CLINICAL SOCIETY. He said relatively few patients with heart disease should have to be sent away from home for expensive diagnosis. In 90% of the cases, according to DR. LEVINE, a family physician with proper training should be able to make a diagnosis.

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1. Rechtman, A. M., and Yarrow, M. W.: Osteoporosis, Am. Pract. & Digest Treat. 5:691 (Sept.) 1954.
2. Cannon, P. R.; Frazier, L. E., and Hughes, R. H.: Factors Influencing Amino Acid Utilization in Tissue Protein Synthesis, in Symposium on Protein Metabolism, New York, The National Vitamin Foundation, Inc., 1954, pp. 55-90.

The nutritional statements made in this advertisement have been reviewed and found consistent with current medical opinion by the Council on Foods and Nutrition of the American Medical Association.

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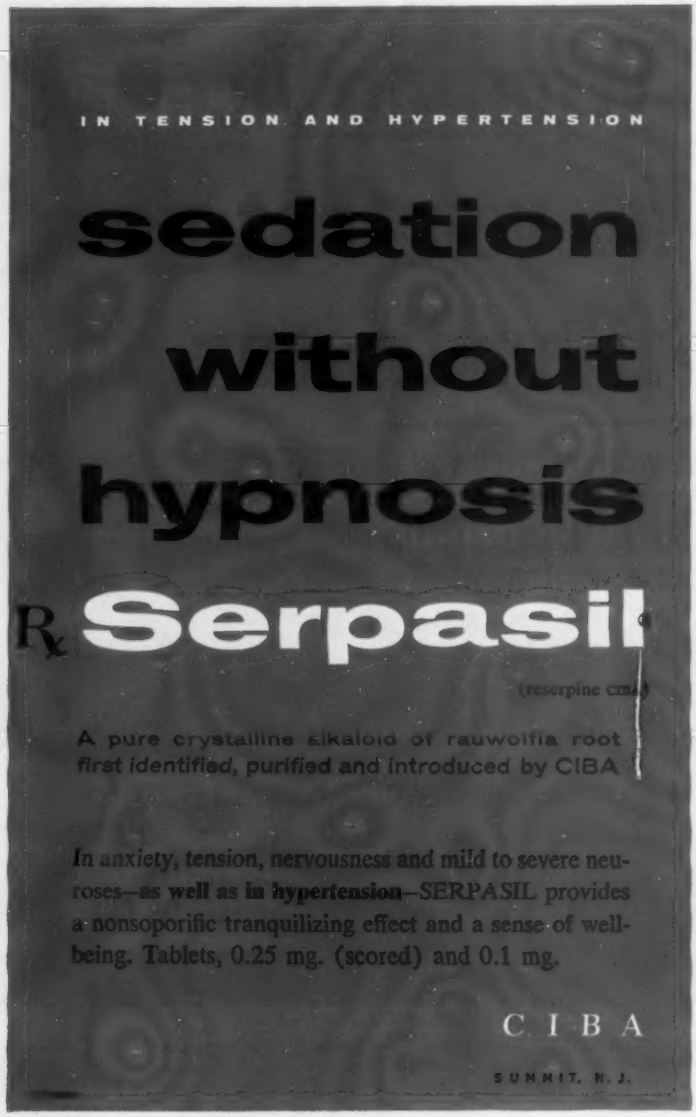
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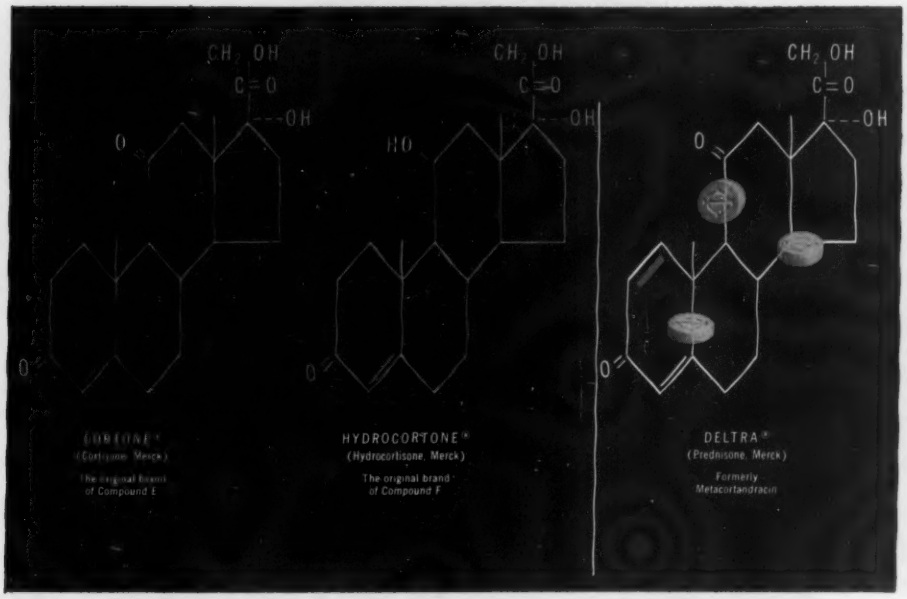

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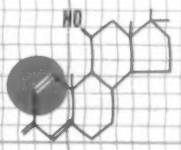

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2. Waine, H.: Bull. Rheumat. Dis. *5*:81, 1955.
3. Tolksdorf, S., and Perlman, P.: Fed. Proc. *14*:377, 1955.
4. Herzog, H. L., and others: Science *121*:176, 1955.
5. Dordick, J. R., and Gluck, E. J.: J.A.M.A. *158*:166, 1955.

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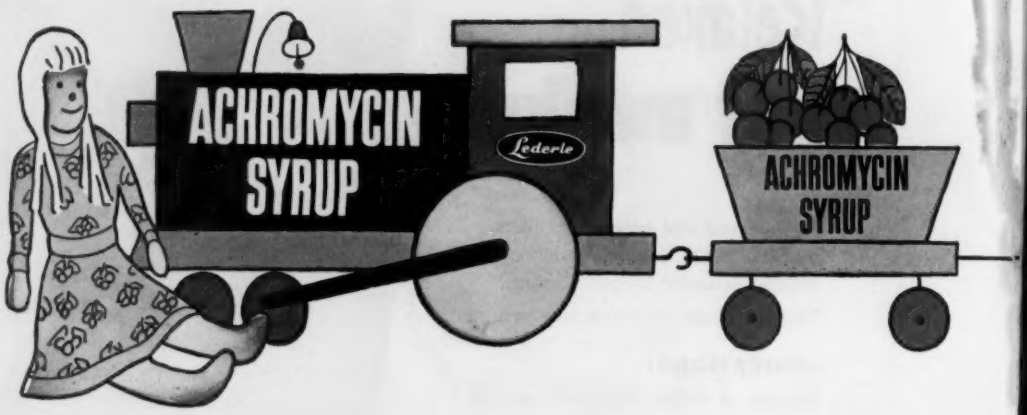

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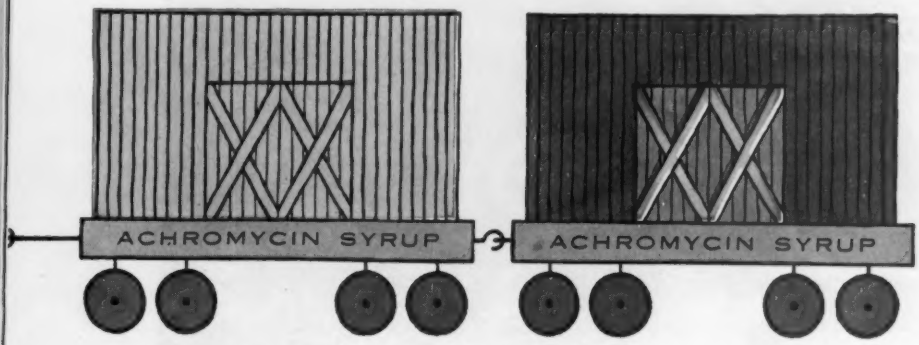

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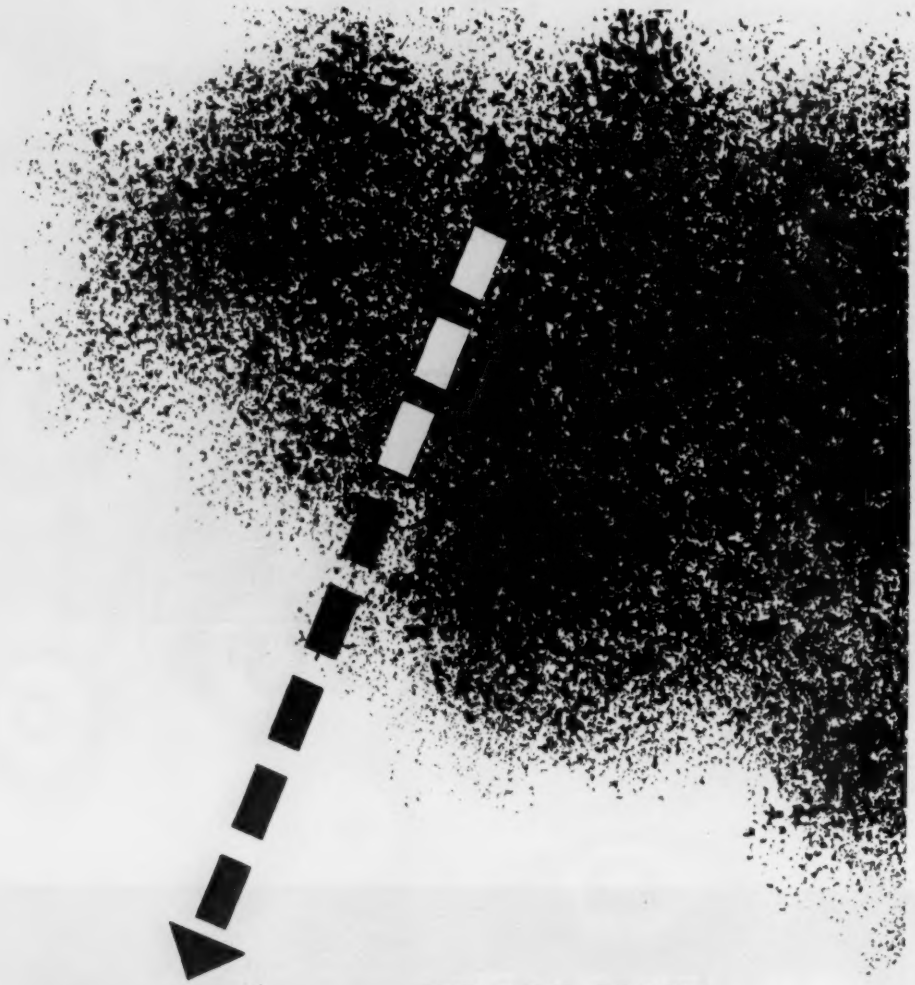

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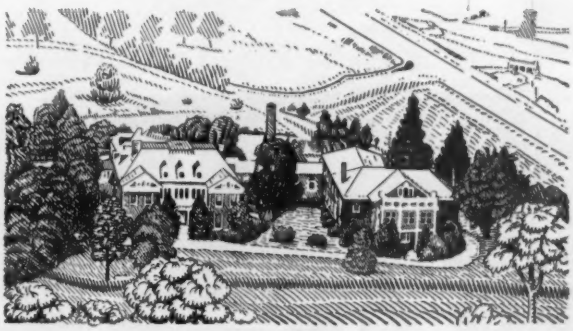

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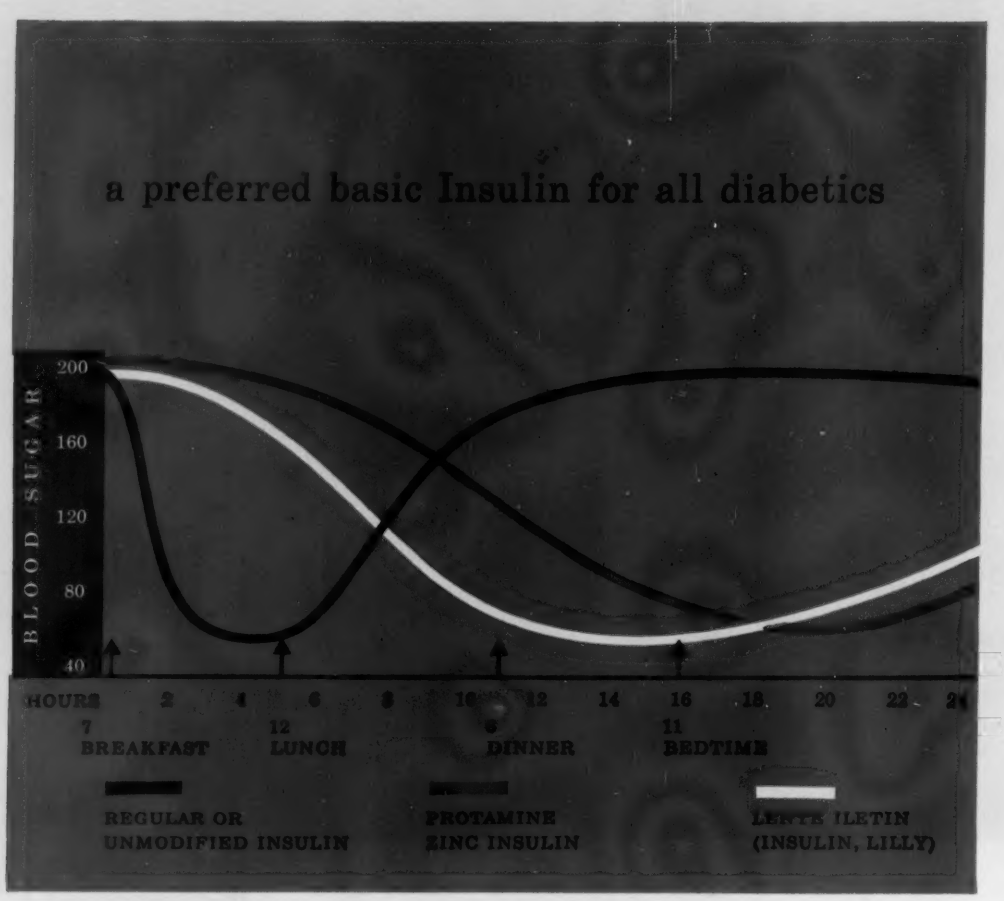

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THE ANATOMIC BASIS FOR A NEW CONCEPT OF THE FUNDAMENTAL ACTIVITY OF THE CEREBRAL CORTEX IN PRIMATES

MARION HINES, Ph.D., Sc.D.

ATLANTA, GEORGIA

It is a privilege to honor the memory of Ross Herman Jennings Bryson, whose academic record, personality, and originality were so exceptional that his intense interest in the nervous system promised a life devoted to further our understanding of its function. I envy those who knew and taught him; because, the discovery of an original mind in a student, who is also beloved, is a rare and precious experience. May the story I plan to tell be worthy of commemorating the promise of such a young man.

"We live" between two sheets of epithelium, one within and one without, each supported by a ubiquitous connective tissue: "and move" by the contraction of muscle tissue, supported by or attached to connective tissue: "and have our being" within nervous tissue, which pervades the connective tissue and innervates epithelium and muscle. Contact with the world within and the world without is maintained by this tissue. I shall analyze and discuss some of the interrelations of the cells which form the anatomic substrate of the master tissue of the animal body.

The great ascending sensory systems of somaesthetic sensibility, of hearing, and of sight present as few as three neurones between their respective end organs and their particular projection areas within the cerebral cortex. Each of these systems has a particular region within the dorsal thalamus where their neurones of the second order synapse with neurones of thalamocortical fibers.

The cortical region of reception for each of these three corticipetal systems is restricted to a relatively small area of cortical space. These three areas are the sensory projection areas. To them another is added, the motor projection area (fig. 1). When I was a medical student at the University of Chicago, and for many years thereafter, only one descending or motor system—the pyramidal or corticospinal tract—was recognized. At that time this motor system was thought to stem from cells within, and only within, the motor projection area.

Between the motor projection area and the three sensory projection areas lie many cubic centimeters of cortical tissue, more in man than in other primates (compare figure 1 with figures 2[1] and 3[2]), the association areas. These areas, in spite of data to the contrary in the older literature, were taught as being independent of thalamic nuclei. The nerve impulse supposedly arrived at a sensory cortex, transferred by intercortical association fibers to an association area, thence to the motor cortex, and down the corticospinal tract to the ventral horn cells. These linked chains of neurones arose in the periphery, ascended to the cortex, traversed that organ, returned by a certain descending tract, and thence, via the peripheral nerves, to muscle. Why was neurology, at that time, difficult for medical students?

During the past 20 years additional corticifugal systems were recognized. Each great posterior lobe presented its own, whereas the frontal lobe took the major part.

The Second Bryson Memorial Lecture, the University of North Carolina, Chapel Hill, February 26, 1953.

From the Department of Anatomy, Emory University School of Medicine, Atlanta, Georgia.

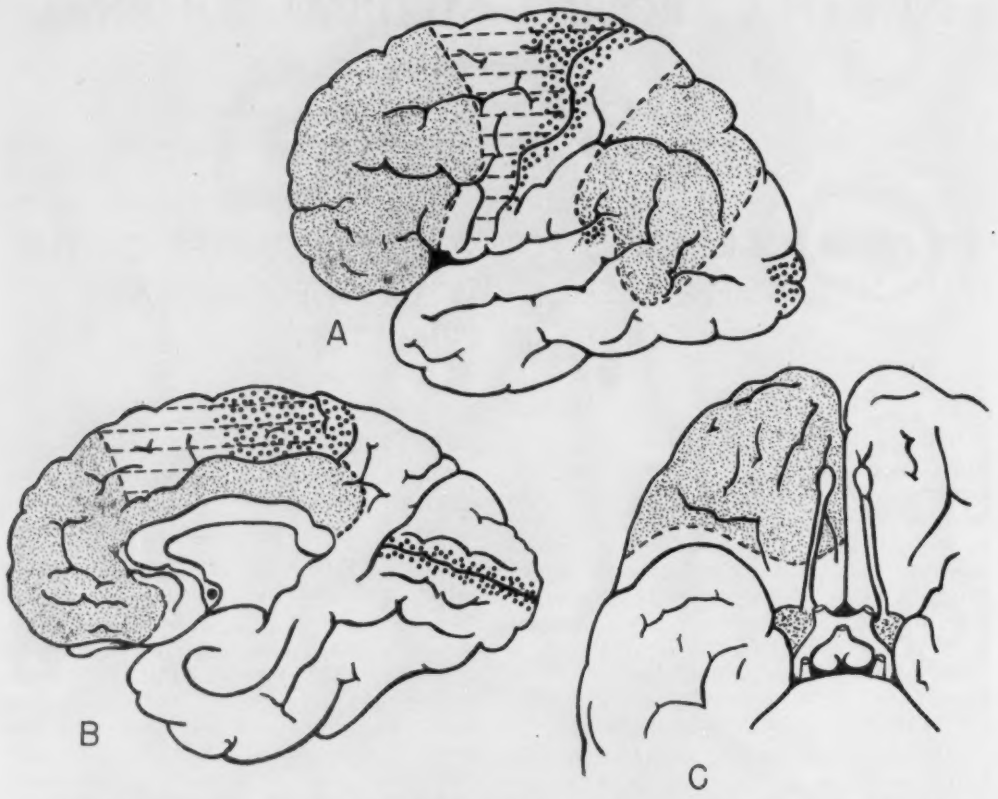

Fig. 1. Line drawings of the lateral (A), the medial (B), and the orbital (C) surfaces of the human cerebral cortex, showing the projection areas, motor and sensory (large dots), and the areas of projection of the thalamic nuclei of association (small dots), as well as that of the nucleus ventralis lateralis (broken lines). The sensory projection area for hearing (Heschl's transverse convolutions) is shown as though seen through the superior temporal gyrus.

The prefrontal area receives the projection of the nucleus medialis, and the gyrus cinguli, that of the nucleus anterior. The nucleus lateralis posterior projects to the superior parietal lobule, and the pulvinar, to the inferior parietal lobule as well as to the junctional region of the occipital and temporal lobes.

Within the past 15 years an increased number of corticipetal systems became known, and association areas were recognized as projection areas also, for the projection of thalamic nuclei of association (fig. 1).

Using the old method of retrograde degeneration, Le Gros Clark[3] and Walker[4], in 1936 and 1938 respectively, outlined upon the cortex cerebri of the macaque the projections of these nuclei of the dorsal thalamus, which do not receive terminals of ascending sensory systems. The nuclei are the nuclei of association (fig. 4). The frontal lobe received throughout the extent of the area frontalis granularis, axones arising in the nucleus medialis, called by Walker the nucleus medailis dorsalis; the parietal lobe and the temporal lobe entertained those springing from the nucleus lateralis posterior; whereas the three posterior lobes shared the projection of the pulvinar and the nucleus lateralis posterior. Upon the medial surface of the "limbic lobe" the receptive area for the nucleus anterior was confined to the gyrus cinguli[5]. For the sake of completeness, a small thalamic nucleus, the nucleus lateralis dorsalis, projects to the cortical surface about the ventral tip of the central fissure. Besides this small nucleus, the four large nuclei of association—the nucleus anterior, the nucleus medialis, the nucleus lateralis posterior, and the pulvinar—project upon the association areas of the cerebral cortex.

The nucleus ventralis lateralis, which sends corticipetal fibers to the whole of the

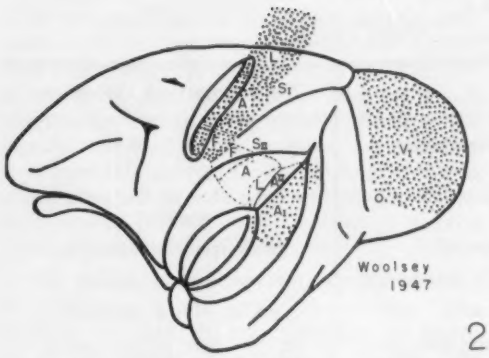

Fig. 2. Line drawing of the lateral surface of the cerebral cortex of the macaque's brain. The lateral fissure is shown as opened. The sensory projection areas or the sensory areas I are outlined with large dots; whereas, sensory areas II are bounded with broken lines. (Redrawn from Woolsey's figure 1 C, Woolsey, C. N.: Patterns of Sensory Representation in the Cerebral Cortex, Federation Proc. 6:437-441 [June] 1947.)

area frontalis agranularis (the denser projection is posterior), is strictly a nucleus neither of sensory reception nor of association. This nucleus, apparently unrelated to others of the lateral nuclear mass, is activated by the terminals of the brachium conjunctivum.

Thus, by this method of analysis, a large group of thalamic nuclei escaped possession of cortical projection fibers. They are the intralaminar nuclei (the centralis medialis and lateralis), the cephalic pole of the reticular nucleus, the centre median, the nu-

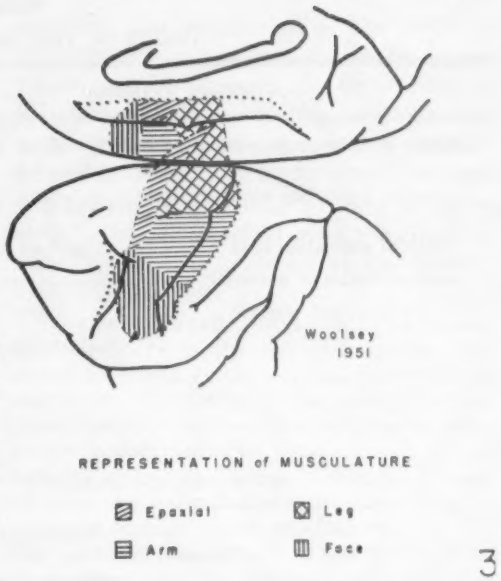

Fig. 3. Line drawing of the lateral surface and the adjoining medial surface of the precentral motor cortex of the macaque's brain. The fissures are drawn as though opened, in order to reveal the motor areas which lie within. The precentral motor cortex occupies the precentral gyrus, the anterior bank of the central fissure and the posterior bank of the inferior precentral fissure, as well as a part of the medial surface. The supplementary motor cortex occupies the medial surface anterior to the leg area of the precentral motor cortex. (Redrawn from a figure made by Woolsey and used by Erickson and Woolsey in their paper presented before the American Neurological Association in 1951.)

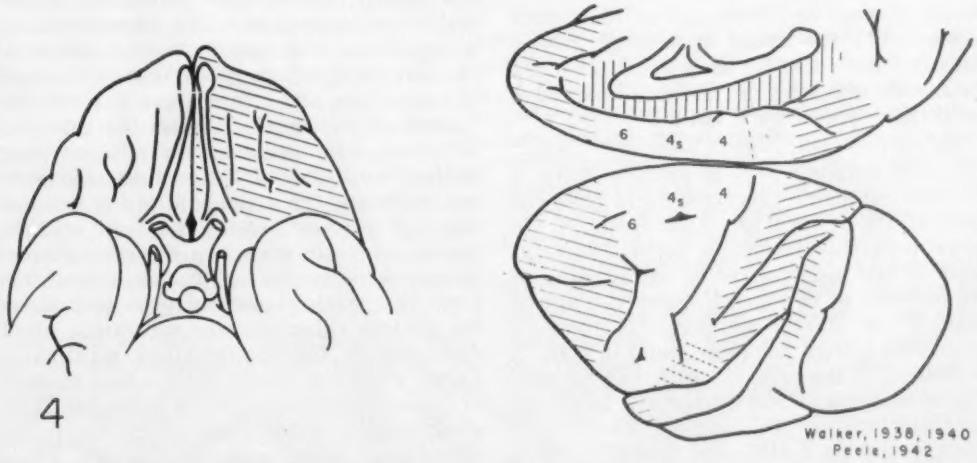

Fig. 4. Line drawing of the projection of the thalamic nuclei of association upon the lateral, medial, and orbital surfaces of the cerebral cortex of the macaque. (This drawing was made from data presented by Walker [1938: 1940] by Peele [1942], and by Rose and Woolsey, 1948).

Table I

NUCLEI OF THE DORSAL THALAMUS

Cortical Projection		Without Cortical Projection
Nuclei of Sensory Reception	**Nuclei of Association**	
medial geniculate body*	nucleus anterior†	cephalic pole of the reticular nucleus‡
lateral geniculate body*	nucleus medialis†	nucleus ventralis anterior‡
nucleus ventralis posterior* (lateral and medial)	nucleus lateralis posterior†	intralaminar nuclei‡
	pulvinar†	nuclei of the midline‡
	nucleus lateralis dorsalis	inferior part of the medial nucleus‡
		centré median‡
From Cerebellum		
nucleus ventralis lateralis*		

*non-recruiting nuclei
†receive recruiting waves from recruiting nuclei
‡recruiting thalamic nuclei

An outline of the nuclei of the dorsal thalamus classified as those which project to the cerebral cortex and those for which no such projection was found by Walker (1938). Those which project to the cerebral cortex are classified as nuclei of sensory reception and as nuclei of association, together with the nucleus ventralis lateralis, which receives the terminals of the dentato-thalamic tract. The recruiting response of each nucleus as given by Starzl and Whitlock (1952) is indicated.

cleus ventralis anterior, the magnocellular part of the nucleus medialis dorsalis, and the nuclei of the midline. The last four of this group of six send efferent fibers either to the hypothalamus or to the nucleus caudatus and the putamen.

Omitting the nucleus ventralis lateralis, the dorsal thalamus contains three kinds of nuclei, two of which project to the cortex cerebri: (1) the nuclei of sensory projection, (2) the nuclei of association, and (3) the nuclei, which by the methods used, have no cortical projection(table 1).

Thirty-five years ago Winkler[6] wrote that each thalamic nucleus sending fibers to the cerebral mantle, received fibers from the area of its projection (see Head[7]). In large part this has been proved true, at least in the macaque, by a combination of the methods of retrograde degeneration and that of the Marchi technique. No corticogeniculate system has been found in man. It is present in the monkey. Although reciprocity of thalamocortical connections is usually characteristic of the monkey, Peele[8], in 1942, found no corticipetal fibers to match the corticifugal projections from area 3 to the nucleus lateralis posterior, from areas 5 and 7 to the nucleus ventralis posterior, and from area 5 to the nucleus medialis dorsalis. The anatomic basis for the "looped circuit" was known long before the term itself was conceived.

The great core of the brain stem, around which the ascending systems are placed, was named the reticular formation in the medulla oblongata and the tegmentum in the midbrain and thalamus. The comparative neurologist has noted that this mass of nerve cells and nerve fibers has not decreased in phylogeny. Rather, the reticular formation has increased until it occupies, in the rostral pole of the medulla oblongata and midbrain, the great bulk of the nervous tissue. For example, at the level of each cranial nerve in man, the reticular formation presents specialized nuclei. Out of this formation, such gigantic groups of cells as the nucleus ruber and the substantia nigra developed in the mammalian midbrain. Large groups of nuclei were added to each of these midbrain nuclei in primates. This great region defied analysis by the older methods of defining neurone length. Those closely packed nerve fibers were interrupted by the interposition of small and large nu-

clear groups. For many years I told my students of neurology that the reticular formation must be of primary importance in the economy of man, because it had continued to grow in size and complexity during phylogeny, and that should someone become able to injure this system, leaving intact the long ascending and descending systems, its function would probably be learned. I was a truer prophet than I dreamed.

The analysis of the anatomic relationships of neurones is no longer dependent upon ablation, the Marchi technique, or the method of retrograde degeneration. Rather, the assembly of new data is made possible by the development of electrical stimulators, of electrical recordings, and by the simplification and modification of the Clark-Horsley apparatus. Structures deep within the brain stem can now be destroyed or stimulated locally, while electrical activity of a distant nucleus is recorded concomitantly.

The reticular system (the reticular formation and the tegmentum) contains both ascending and descending axones. The descending systems, yielding in part to the older methods of analysis, stem from the hypothalamus, the midbrain tegmental nuclei, and even from the cortex cerebri. These systems[9] inhibit or facilitate both tone and movement. The ascending fibers are a complex group, some stemming from reticular nuclei, whereas others are collaterals of ascending sensory systems[10]. Not only do collaterals from the lemniscus systems, the lateral, the medial, the trigeminal, and the spinal[11], enter the reticular system—a recent rediscovery by Magoun[12] of Winkler's finding[6]; but also, axones from the nucleus of the fasciculus solitarius[13] and from the posterior accessory optic tract (fibers unmedullated in the monkey, Gillilan[14]; in man, Marburg[15]). The reticular system contains, therefore, not only facilitory and inhibitory systems, but also contributions from the ascending visceral sensory systems and from each of the somatic ascending tracts, including the vestibular[16].

In 1939 Ranson[17] found that interruption of the reticular system dorsal to the hypothalamus produces a monkey distinguished by lack of motor initiation, by a mask-like face, and by the loss of the desire to eat. Ten years later a lesion placed at the cephalic end of the midbrain[18] produced a comparable result. This general hypokinesis was interpreted as the result of reduction of background excitation in the spinal cord by severing the connections of the extrapyramidal corticifugal system within the reticular formation. These animals seemed to show "a lack of the will to move, a paralysis of volition, not one of movement." The corticospinal tract remained intact. Furthermore, a defect at the cerebral level was present.

This defect warned that injury to the ascending fibers in the reticular system produced an effect at the cortical level. Elimination of this system in the medulla oblongata, sparing the long ascending sensory systems, was followed by a change in the activity of cortical neurones such that many of them discharged simultaneously. A more striking change, however, followed the interruption of this system in the midbrain or in the thalamus (subthalamus or hypothalamus). The animal slept and the electroencephalogram of the cortex cerebri showed the long, slow waves and spindle bursts of sleep[12]. On the other hand, when physical interruption was confined to the periaqueductal grey of the midbrain or to the long sensory pathways, the animal (cat) remained behaviorly awake and the electroencephalogram demonstrated the low-voltage, fast activity of alert wakefulness. When such a cat sleeps, either tactile or auditory stimuli will arouse it and will activate its electroencephalogram to that of the waking state. But, after interruption of the cephalic end of this activating system, auditory and tactile stimuli can induce a degree of behavioral arousal and activate the electroencephalogram of wakefulness. Nonetheless, this electroencephalographic activation (asynchronization) terminated almost immediately after the arousing stimulis ceased. The animal slept, and the electroencephalogram was that of sleep.

What thalamocortical pathways transmit the electrical activity normally induced in the ascending division of the reticular activating system to the cerebral cortex? In 1942 Morison and Dempsey[19] discovered a thalamic system in cats from which recruiting wave responses were evoked over widespread areas of the cortical mantle by direct repetitive low frequency stimuli of thalamic nuclei. This recruiting response resembled spindle bursts and was recorded

from the cortex under barbiturate anesthesia.

This diffuse thalamic projection system, first explored in the cat by Starzl and Magoun[10], was organized within the medial nuclear group of the dorsal thalamus—the very nuclei for which Walker[20] found no cortical projection. The nuclei of the midline, the intralaminar nuclei, the nucleus ventralis anterior, the cephalic pole of the reticular nucleus, and the central median gave excellent recruitment to cortical areas when stimulated directly with a current of low frequency (7.5 per second), and of specific characteristics (a voltage of 1 to 7, and a falling phase of 1 ms). Besides these noncortical projection nuclei, the nucleus anterior, the nucleus medialis dorsalis, the nucleus lateralis posterior, and the pulvinar also gave recruiting responses (see table 1). No recruiting activity was discovered in the sensory nuclei or in the nucleus ventralis lateralis. Excitation of any one of the recruiting nuclei evoked a sweep of recruiting waves in all of the other recruiting nuclei. The more rostrally lying nuclei showed the greatest potential response, and of these the nucleus ventralis anterior was the most intense focus. These nuclei constitute a neural unit oriented caudo-rostrally, and discharge as a mass. The principal radiations to the cerebral cortex were rostralward from the cephalic part of the thalamus and lateralward via the nucleus lateralis posterior and the pulvinar. The cortical receiving regions were confined to the association areas. The somatic, the visual, and the auditory projection areas were uninfluenced by stimulation of the thalamic recruiting nuclei.

A similar analysis of the diffuse thalamic projection system in the monkey[21] uncovered a similar, but not identical, organization of recruiting thalamic nuclei. In the monkey the effective stimuli were characterized by a lower frequency (5-6 per second) and a lower voltage (1-4v). The thalamic sites of origin of this diffuse system were similar to those in the cat. The nucleus ventralis anterior at the rostral end of the system was the most excitable as in the cat; whereas the medial nucleus was more strongly implicated. The latter nucleus is the only one of the association nuclei in the monkey's thalamus which will elicit cortical recruiting responses.

As in the cat, the recruiting nuclei were organized for mass excitation. Recruiting waves swept caudally with excitation of the rostral nuclei; rostrally, upon stimulation of the caudal nuclei; and both rostrally and caudally, after activation of the middle of the group. Intrathalamic conduction through the recruiting nuclear group extended also to the nuclei of association. The corticipetal impulses appear to be transferred via the association nuclei, not directly. The distribution of the evoked recruiting responses were definitely circumscribed upon the cortical surface, although the distribution of these cortical potentials were identical for each recruiting nucleus, stimulated. The recruiting responses that were located frontally were more intense and reliable than those discovered posteriorly; inasmuch as the recruiting waves were smaller and followed the stimulation frequency less accurately when taken from the parietal, temporal, or occipital lobes than when evoked on the frontal lobe.

The diffuse thalamic projection (fig. 5) covered the lateral surface of the area frontalis granularis, extending caudally over the anterior half of the area frontalis agranularis. This system is strongly represented upon the orbital surface and over a large part of the gyrus cinguli, extending rostrally upon the superior frontal gyrus. Posteriorly, the thalamic recruiting nuclei projected upon Brodmann's area 7 in the parietal lobe, upon the small part of areas 19 and 18 in the occipital lobe, and upon area 38, the ventrorostral tip of the temporal lobe.

Although these cortical sites of projection of the thalamic recruiting nuclei are also, by and large, coincident with the cortical projection of the thalamic nuclei of association, they are not identical. With one exception the projection of the former occupies less space than that of the latter. The diffuse thalamic projection upon the lateral surface of the frontal lobe trespasses upon the field of the nucleus ventralis lateralis, which is not a recruiting nucleus (compare figure 4 with figure 5). This exception troubled Starzl and Whitlock[21]. They explained this trespass upon the projection field of a nonrecruiting nucleus by hoping that corticipetal fibers from the medial nucleus were present, although unrecognized.

Do the recruiting nuclei follow the general pattern for thalamocortical projection and receive from the area of projection return corticifugal systems? The evidence is

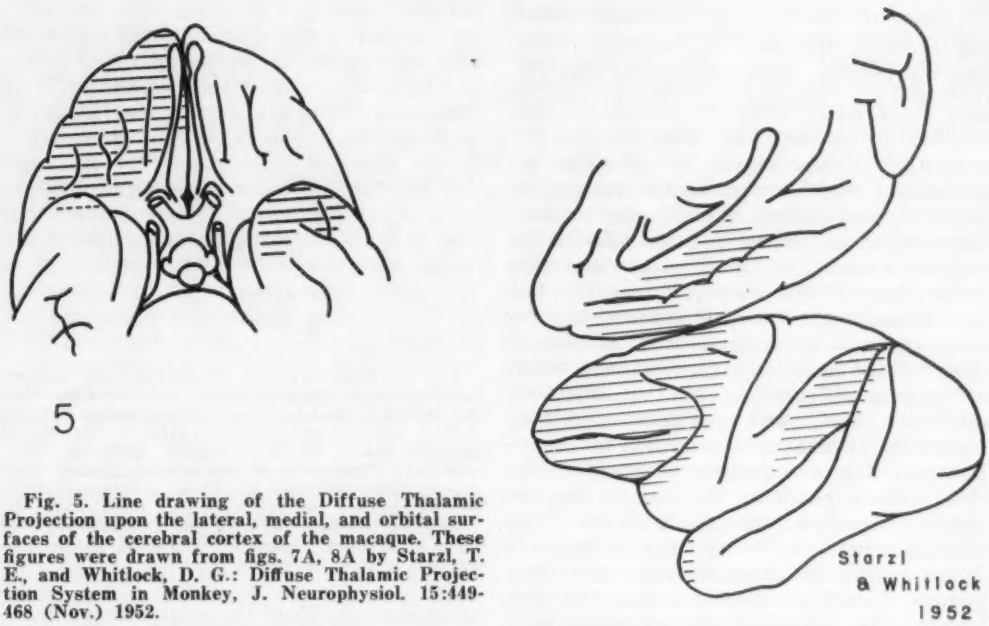

Fig. 5. Line drawing of the Diffuse Thalamic Projection upon the lateral, medial, and orbital surfaces of the cerebral cortex of the macaque. These figures were drawn from figs. 7A, 8A by Starzl, T. E., and Whitlock, D. G.: Diffuse Thalamic Projection System in Monkey, J. Neurophysiol. 15:449-468 (Nov.) 1952.

incomplete and rests upon the technique of controlled afterdischarge. Since the repetitive stimulation of a cortical area elicits a localized afterdischarge, which usually activates related subcortical centers, it is possible to explore the midbrain reticular formation and the thalamic nuclei for electrical potentials related to a locus on the cerebral mantle, given a repetitive stimulus[22].

Thus corticifugal projections from the anterior cingulate gyrus and the lateral prefrontal area were assigned to the intralaminar nuclei, the centré median, the nucleus ventralis anterior, and the nucleus medialis dorsalis, but not to the nucleus anterior; from the tip of the temporal pole to the pulvinar and the nucleus lateralis posterior, but not to any one of the recruiting group; from area 19 of the occipital lobe, to the pulvinar and to the intralaminar nuclei. The parietal lobe was not included in this study. Each of the regions studied was also the site of origin of corticifugal systems, terminating in the subthalamus, the substantia nigra, and the midbrain tegmentum.

Apparently, the group of recruiting thalamic nuclei are related as a whole to circumscribed areas of the cerebral cortex, via the nuclei of association. They receive, on their own part, direct corticifugal fibers from the frontal, occipital and parietal lobes, but not from the temporal lobe. On the other hand, although the majority of the projections between the association thalamic nuclei and the association areas are reciprocal, the cortical association areas do present non-reciprocal corticifugal systems not only to other association nuclei, but also to tegmental nuclei within the midbrain (also substantia nigra) and the ventral thalamus (subthalamus)[23]. No degeneration studies have yet shown anatomically the corticifugal systems to the subthalamus and to the generalized midbrain tegmentum, outlined by the electrical method of afterdischarge.

Although in general the thalamocortical systems are reciprocal, nevertheless, two of the three sensory projection areas (the auditory area has not been reported) and each of the association areas present non-reciprocal systems. These non-reciprocal systems as a whole provided for activation of nuclei within the dorsal thalamus or of motor nuclei in the hypothalamus, in the subthalamus, in the tectum or tegmentum of the midbrain. The reciprocal thalamocortical systems provide looped circuits; the non-reciprocal, either for activation of motor centers or for corticothalamic association.

The stimulus given a sensory end organ—be it a Krause end bulb, a muscle spindle, the retina, or the organ of Corti—activates

two separate systems: (1) the long ascending systems, the sensory thalamic nuclei, and the sensory projection areas; and (2) the reticular activating system, the recruiting nuclear mass of the thalamus, and the recruiting cortical areas, to which the associational nuclei known as the association areas of the cortical mantle, also project. Rich reciprocal connections characterize the recruiting nuclei of the thalamus and also relate them to the association nuclei. But are the thalamic sensory nuclei similarly related to the association nuclei? Walker[4] classified the anterior nucleus as one which synthesizes different aspects of olfactory sensibility; the medial nucleus, as one which correlates visceral and somaesthetic impulses having an affective quality; the nucleus lateralis posterior, for complex somaesthetic integration; and the pulvinar, for sight, hearing, and somaesthetic sensations. These conclusions rest entirely upon conjecture. Myelin preparations may be misleading. The tight fiber plexuses about each of these nuclei have not been analyzed by any method. The lateral geniculate body[24] sends no fibers to the pulvinar (Marchi degeneration studies) in the cat and monkey, although a tract from the optic tectum to the pulvinar exists. Destruction of the pulvinar without injury to the lateral geniculate body left the man with a loss of form in the visual fields in which movement and color remained[25]. It is indeed difficult to relinquish the concept that these nuclei perform some function of association.

Although no direct evidence for intrathalamic association fibers is at hand, may I suggest that the nonreciprocal corticothalamic projections to these nuclei may be the anatomic basis for their assigned function of association. For example, (fig. 6[4,8,22,23,26]) the nucleus medialis dorsalis receives corticifugal fibers not only from the prefrontal cortex, but also from area 4s[23] and area 5[8]; the nucleus lateralis posterior, from the whole somatic area 1, from areas 5 and 7 of the parietal lobe[8], and from the tip of the temporal lobe; and the pulvinar, from areas 17 and 19 of the occipital lobe, and from area 38 and area 22 of the temporal lobe[22]. The function of association may not be that of synthesis at the thalamic level, but rather that which integrates several corticothalamic impulses and reprojects the so-called synthesis back to the cortical association regions. Thus the associational nuclei of the thalamus would not function as nuclei of association at the thalamic level, but rather as association for nervous activity received from several cortical areas—(1) the sensory projection areas, and (2) several association areas.

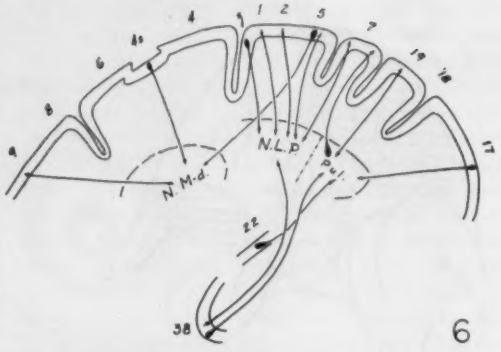

Fig. 6. Line drawing illustrating the corticothalamic and thalamocortical relationships with the thalamic nuclei of association (Abbreviations, N.M-d., nucleus medialis dorsalis, or the medial nucleus; N.L.P., nucleus lateralis posterior; Pul., pulvinar). Lines with double arrows indicate reciprocal thalamocortical nurones; whereas, single arrows indicate the orientation of the thalamocortical or corticothalamic neurones. This drawing was made from data presented by Walker, Peele, Jasper and others, Levin and Hines.

The nucleus ventralis lateralis is not a sensory projection nucleus; nor is it a recruiting nucleus. It has never been given the label of association. Although this nucleus projects to the whole area frontalis agranularis, the densest fiber bundles are distributed posteriorly to area 4[4]. This ventral lateral nucleus receives the terminals of cell bodies lying in the opposite nucleus dentatus, which in turn is activated by the prolongations of Purkinje cells which inhabit the cortex of the lateral hemispheres of the cerebellum. These connections, together with the frontopontile tract from area 4, form the earliest recognized long multiple neurone looped circuit—the fronto-ponto-cerebello-dentato-thalamo-cortical system of neurones. In spite of this neat chain of recognized neurones, no evoked potentials have been reported as recorded from the cortex of the cerebellar hemispheres by electrical stimulation of the motor cortex, although direct stimulation of this part of the cerebellar cortex has altered the spontaneous action potentials of the contralateral motor cortex[4].

On the other hand, is it possible that the cerebellar hemispheres receive nervous impulses from the cortex of the anterior lobe or from the cortex of the midline? For if impulses from these parts of the cerebellar cortex reach that of the lateral hemispheres, then the dentato-thalamic system would transmit impulses modified by incoming sensory systems and by corticifugal projections. For example, evoked potentials on the cerebellar cortex of the midline were elicited by stimulation of the motor cortex. These potentials present the parts of a monkey's body as if projected in an orderly way—that is, a topical localization similar to the topical localization of the skeletal muscle which contracted in response to direct stimulation of this part of the cerebellar cortex[27]. Moreover, potentials evoked by stimulation of somatic area I in the parietal lobe (macaque) show a topical organization of projection[28] similar to that outlined for the motor cortex upon the four anterior folia of the cerebellar cortex. Furthermore, proprioceptive sensibility[29] and tactile sensibility[30] from the ipsilateral part of the body project upon these same subdivisions of the cerebellar cortex and present an identical topical localization.

This triple somatotopical localization is not continued into the anterior vermis; for the folium is the site of potentials evoked by stimulation of the cochlea by click[30], and of the auditory cortex[31] by an electric current; and the tuber, that of evoked potentials elicited by photic stimulation of the eye[30], as well as that of electrical stimulation of the visual cortex[31a,b].

The cerebellar cortex of the midline receives afferent fibers from the peripheral nervous system and from the cerebral cortex in a common region. We do not know whether the cerebellar cortex of the lateral hemispheres receives association fibers from these specialized association-like regions of the cerebellar cortex. If so, the motor area of the cerebral cortex would then be subject to some type of regulatory circuit in which peripheral sensibility and cortical sensory projections have a part. If not, the nucleus ventralis lateralis is activated only, or so it seems, by the cortex to which it projects; whereas this beautiful correlation in the anterior lobe would project via midline nuclei into the reticular formation, contributing to the inhibition or facilitation of tone[32]. Until further evidence is presented, we must conclude that, in spite of the arrangement of neuronic relationships within the cerebellar cortex, the cortex is peculiarly partitioned. Consequently, the anterior lobe, the midline, and the paramedian lobule contribute nothing to the functional activity of the cerebellar hemispheres.

The cortex cerebri presents four great subdivisions—the well known frontal, parietal, occipital, and temporal lobes. Unlike each of the three posterior lobes, organized about a single sensory system, the frontal lobe is organized about a motor system, the well known corticospinal tract. The three posterior lobes share projections from the pulvinar; the parietal and temporal, from the nucleus lateralis posterior. The frontal lobe shares no thalamic projections. Rather, the whole area frontalis granularis is reserved for the projections from the nucleus medialis, the gyrus cinguli, for those from the anterior nucleus. Again, the frontal lobe receives the lion's share of the diffuse thalamic projection. Although each one of the three posterior lobes present corticifugal systems, the variety and number stemming from the frontal is measurably greater[23].

It is common knowledge that the electrical stimulation of the precentral gyrus of primates elicits topical contractions of skeletal muscle. These results fall naturally into contractions of single muscles or parts of muscles, contractions of flexor or extensor sheets of muscles, as well as co-innervation of both flexors and extensors, which in their sequence of contraction resemble the patterns of movement used by the experimental animal in question[33]. These results have long been assigned to activation of the corticospinal tract. The electrically excitable cortex is not conterminous with the region known as area 4, either upon the lateral surface or upon the medial surface of the area frontalis agranularis. This medial surface presents in man and in the macaque, not only a topical arrangement of skeletal musculature innervated by the lower lumbar and sacral segments, but also another motor cortex, upon which the muscles of the body are topically, and less perfectly, re-represented. The supplementary motor cortex, first discovered by Penfield in man (full report, Penfield and Welch[34]), has been completely worked out in the monkey (fig. 3) by Woolsey[2]. The diffuse thalamic projection skirts the borders of each of these motor cortices.

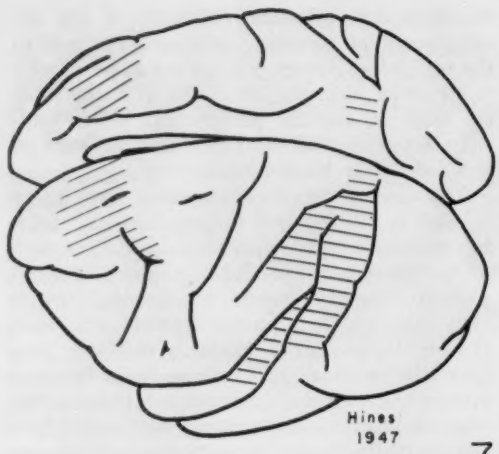

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Fig. 7. Line drawing of the extrapyramidal motor areas of the four lobes of the cortex cerebri, as found in the macaque: Used as illustration for "The Motor Areas" (Hines, 1947, not published.)

The electrical current applied to the precentral motor cortex, before or after surgical division of the pyramids, is able to elicit nontopical contraction of muscle and inhibition and facilitation of tone [23,35]. These extrapyramidal activities are better developed in the anterior division of the area frontalis agranularis than in the posterior division.

Besides these specialized motor cortices of the frontal lobe, each lobe of the monkey's cortex presents its own motor center, characterized in common by an adversive field and a quieting effect (fig. 7). The anterior adversive field lies upon the frontal lobe and extends from the anterior border of area 6, over 8, to include a part of Brodmann's area 9. The posterior field spreads over the junctional region of the parietal, occipital, and temporal lobes. The adversive movements vary from simple conjugate deviation of the eyes to that of head and eyes. In the anterior field these adversive movements may increase to include the axis, both opposite extremities, and sometimes even the tail. Orientation of the ears to the side of stimulation is present in each of these fields except that of the parietal lobe. The quieting effect, causing cessation of spontaneous movement, confers upon the animal a curious appearance of attentive repose. Although this effect is generalized, it is more easily and certainly obtained from the anterior field on the lateral surface of Brodmann's area 9 than from the three posterior fields [23,35].

Each of these fields also yields special results. Stimulation of the posterior field in the temporal and occipital cortex elicits a complex movement of reaching and grasping, whereas that of the parietal lobe (area 7 and 5[36]) caused elevation of the contralateral shoulder, with or without protraction of the upper extremity. Stimulation of the anterior field (area 8 and anterior 6) produces an orienting movement of head and eyes toward the midfrontal plane[23].

These four cortical motor fields share cortical space with the cortical projections of the thalamic nuclei of association[35b]. The type and site of these artificially elicited movements suggest that the electric current may have uncovered patterns of normal motor responses to significant stimuli. Convergence of the eyes was evoked only from the parietal field (the locale of projection of the nucleus lateralis posterior), perhaps because convergence of the eyes in the macaque relates only to stimuli originating upon the surface of the body (such as the meticulous activity of grooming). The macaque neither reads nor writes, nor threads needles. Constriction of the pupil was located only upon the occipital field (area 18)[35b,37]; but reaching and grasping, found only where the pulvinar projects upon the occipital and temporal lobes, is a response primarily to sight or to hearing, carrying perhaps connotation of an additional sensory correlate. Only in the frontal field did adversion reach completion, so that the whole body was turned away from the stimulus. Only in this field did orientation toward the midfrontal plane occur, suggesting when completed, alerted attention[35b].

Whatever the connotation of the afferent impulses reaching these motor-association areas, the common motor responses provided in them are rejection and quieting. Each of these phenomena was better developed in the frontal area. Orientation of the body toward a complex stimulus arriving within these association areas appears to be specialized and to bear the mark of the function of the lobe—the bodily stance of attention in the frontal lobe; eyes ready for close examination in the parietal lobe; synergetic movement toward the object in the occipital and temporal lobes.

Since these four extrapyramidal motor fields share the cortical surface with the

projections of the thalamic association nuclei more closely than they do with the projections of the diffuse thalamic system, it is logical to consider that the associative rather than recruiting activity acts as the stimulus which elicits these motor responses.

Completely unrelated to these extrapyramidal motor fields and yet situated within the area of projection of the association nuclei, the stimulating electrode has discovered two more motor fields—one, on the anterior limits of the gyrus cinguli (area 24), the other on the orbital gyri. The former lies beyond the limit of the projection of the thalamic recruiting nuclei, the latter well within it. Stimulation of the cingulate gyrus (Smith[38]; see also, Ward[39]) produced a combined effect upon the autonomic and somatic motor nuclei, which read like a description of debilitating fear and behaved like a mounting recruitment of smooth and skeletal muscle, terminating with relaxation. Stimulation of the orbital surface was confined to autonomic effects—instantaneous fall of blood pressure and a subsequent slow rise, arrest of respiration, and rise (6-8° F.) in temperature[40]. The results suggest that the orbital surface may exercise some control over the hypothalamus, to which it sends many efferent systems.

The thalamic recruiting system does not activate the motor cortex itself. If the modern interpretation of the function of the nucleus ventralis lateralis as simply regulatory be true, the motor cortex must depend upon intercortical neurones for its activation, such as that provided by the U fibers from the postcentral-gyrus. And yet, after the bilateral removal of the whole area frontalis agranularis, the total region to which the nucleus ventralis lateralis projects, a macaque is able to run better than he can walk or climb, and to sit and to feed himself in a cat-like manner. He is able to relax, lie quietly if the environment is quiet, and to sleep and awake. He maintains an interest in the happenings in a laboratory, and learns to anticipate the time for feeding and the appearance, at a distance, of a favorite food or of the individuals who feed and care for him.

This type of monkey, however, has lost the fractional use of musculature; movement is slow and difficult to initiate, unless the animal is excited; and relaxation of skeletal musculature is likewise slow and extraordinarily difficult. Aim cannot be readjusted after a movement has been initiated. Once begun, the whole movement must be completed. Inhibition of movement and fixation does not occur. Instead, fixation is achieved by movement into the desired position, followed by holding onto an immovable object. The facial musculature continues to be used to express a monkey's emotions, and that about the eyes is unchanged. The pyramidal system and the majority of the extrapyramidal motor systems have been destroyed, as well as those which inhibit tone[23].

On the other hand, if the operation is confined to the area outlined by Starzl and Whitlock (an area which approached the boundaries of area 6 and the anterior border of area 4; compare figure 8 with figure 5), for the projection of the diffuse thalamic system upon the anterior division of the precentral motor cortex, tone is greatly increased in flexors and extensors alike. Movement, even in a large runway, is painfully slow because relaxation is so tardy. The facilitation of tone has lost a major part of its opposition[23]. Removal of the anterior

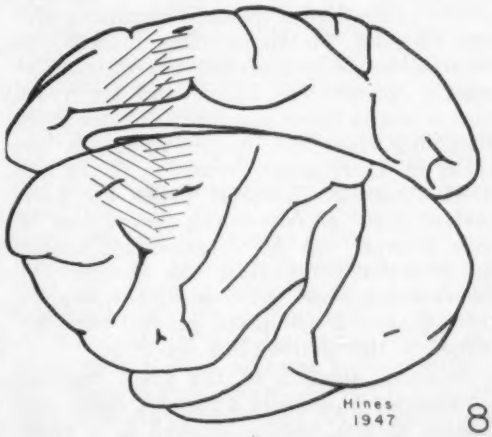

Fig. 8. Line drawing of the extrapyramidal motor, inhibitory, and facilitory areas in the anterior half of the area frontalis agranularis of the frontal lobe (Macaca mulatta). The anterior field (area 6 plus anterior 4) yields flexor synergies, reaching and grasping, inhibition of flexor tone and of the grasp reflex, when stimulated with the sine wave current. With similar electrical stimulation, the posterior field (anterior area 4 plus posterior 6) yields quadripetal progression, extensor synergies, standing tone, and inhibition of extensor tone. These phenomena were obtained after the medullary pyramids were surgically divided. This figure was used as an illustration for "The Motor Areas" (Hines, 1947, not published).

part of this area is followed by appearance of the grasp in the opposite hand[41]; of the posterior part, by increase in standing tone, brisk and irradiating reflexes, clonus, and a minimal paralysis, confined to abductors of the toes and the adductors of the femur[42].

Electrical stimulation of the anterior division (area 6) is able to elicit flexor synergies and inhibit tonic innervation of the flexors and the grasp reflex; of the posterior division (area 4s), to evoke quadripedal progression, extensor synergies and inhibit tonic innervation of the extensors (fig. 8). Frequently, increment in tone follows stimulation of either area. These results have no topical organization and are obtained subsequent to surgical division of the pyramids (see Hines[23]). Each of these areas send efferent fibers into the reticular formation; those springing from area 6 disappear in that formation, laterally in the medulla oblongata, whereas those arising from area 4s terminate within a reticular nucleus of the midbrain and within the medial part of the reticular system in the medulla oblongata (Hines, unpublished).

After removal of that part of the precentral gyrus which lies posterior to the projection of the diffuse thalamic recruiting system (see fig. 5), the monkey loses for a short time the differential use of skeletal muscle opposite the lesion, and for years tone is less in these muscles[23]. Nerve fibers stemming from this region terminate laterally in the reticular formation of the medulla oblongata. Moreover, when the postcentral gyrus is removed, a severe loss of tone follows, but no degeneration within the reticular formation was observed[36]. Degenerated fibers were seen, however, in the spinal cord within the general locus assigned to the corticospinal tract[8].

Bilateral ablation of the area frontalis granularis[43] produces a restless, easily distracted animal, characterized by a short memory. No changes in the use of skeletal muscle, in the normal distribution of tone, or in either the deep or the superficial reflexes are present. The blink reflex, however, has vanished. At first, these animals wear a tense, probably anxious expression; later, after years, a smooth, unwrinkled face. They seem to have lost a certain indefinable contact with their environment. The technicians call these monkeys "goofy."

A combination of these ablations of the frontal lobe, excluding the facial areas of the precentral motor cortex, produces a monkey without facial expression. The wide open round eyes follow moving objects or individuals, seeing without understanding. All contact with environment is lost. Threatening gestures receive no response. Nothing is learned. The will to eat has vanished. They have to be forcibly fed. Although periods of sleep and wakefulness follow each other in normal rhythm, no relaxation of muscle occurs during the former. Reaching and grasping are the only movements performed by the upper extremity; alternate limited flexion and extension in a bipedal rhythm, the only movement of the lower extremity. The fact that the three posterior lobes, with which animals and man have been thought to learn, were intact was of no avail. The motor areas for facial expression were never used for recognition. Indeed, such a monkey presents the appearance of an idiot[23].

For more than a decade I have been puzzled by this result, just as I have been puzzled about the afferent side of the reflex which enabled area 6 and the anterior border of area 4 to make their contributions to tone. The projection of the recruiting thalamic nuclear mass by way of the nucleus medialis dorsalis on the frontal lobe may offer an explanation. The reticular activating system so necessary for arousal in cat and monkey sends its major projection to the anterior part of the frontal lobe, keeping the animal awake and in contact with the environment. The loss of this alerting system, into which all ascending systems send collaterals, appears to contribute some component necessary for the proper appreciation of the sensory stimuli themselves. Certainly in this monkey, the significance of sensory stimuli seems to have vanished in spite of the diffuse thalamic projection via the nucleus lateralis posterior and the pulvinar. Starzl and Whitlock's finding that the recruiting potentials on the posterior projection region were damped whereas those in the anterior cortical area were not, may be the expression of a qualitative difference in the function of these two areas. It seems, therefore, that the learning process, long assigned to the association areas of the three posterior lobes, cannot take place without the presence of the thalamic projection to the frontal lobe.

When only a part of the anterior diffuse

projection area is removed, as in the bilateral prefrontal monkey, memory is short, the attention span disturbed, and movement increased; but the recognition of food, the opposite sex, and the human beings who care for them is retained. In such a preparation, the areas of projection of the diffuse thalamic system on the gyrus cinguli and that upon the lateral surface, posterior to the inferior precentral fissure, were spared.

Comparison of one result of amputation of the dominant occipital lobe in man[44] with one of those which follow cutting the projection of the medial nucleus on the prefrontal area in lobotomy in man suggests a fundamental difference in the function of these two association areas. The first patient was able to identify an orange by smell, not by sight; a bell, by sound, not by sight. The second type of patient is able to name any object or group of objects by sight, hearing, or smell, but seems to be rather indifferent to the object. The stimulating object is interpreted upon a lower level of awareness, for it has lost a certain connotation which it previously possessed[45].

In the light of these findings, the result of electrical stimulation of the extrapyramidal motor fields of the monkey's cerebral cortex takes on new meaning; for, as noted previously, the association area of each lobe in that animal's cortex is provided with motor responses which allow examination of an object in terms of the sensibility about which the lobe is organized: convergence of the eyes and shifting the proximal musculature of the upper extremity in the parietal lobe; orientation of the ears in the temporal lobe, and reaching and grasping in the occipital and temporal lobes. Although each of these posterior areas provides for quieting and partial rejection, the prefrontal field presents a lower threshold for the quieting effect, and two patterned movements, one of complete rejection and the other of alerted attention. These patterns of body adjustment, obtained from the prefrontal field, may express a response to the affect which surrounds the stimulating object.

Although it is impossible at the present time to separate the affect which the nucleus medialis appears to transmit to the prefrontal area from the general alerting considered to be the activity of its projection as a part of the recruiting system of the thalamus, it is difficult to believe that the activity of the diffuse thalamic projection to the anterior division of the precentral motor cortex (for this region receives no known corticipetal projections from the nucleus medialis) is confined only to keeping this piece of cortex awake. I suggest that the recruiting activity projected upon area 6 and anterior area 4 may contain the afferent fibers from the ascending reticular systems in a multineurone circuit, the efferents of which terminate in the reticular formation of the midbrain and medulla oblongata. Certainly the fact that area 6 and the anterior border of area 4 (4s) present separate corticifugal systems which terminate within different loci of the reticular system suggests that a comparable ascending system exists.

Thus, if this logic be a true interpretation of fact, the motor systems, similar to the sensory systems, would present a dual control of tone, which stems from the precentral motor cortex—*one* linked with the pyramidal system and its satellites, which insures reciprocal innervation and a degree of tone in the activation of musculature, modified via the cerebellum and the nucleus ventralis lateralis and perhaps by way of intercortical connections with the parietal lobe; and *the other*, within the reticular system, which appears to be able to shift tone into extensors or into flexors without concomitant movement.

In this connection we must not forget that somaesthetic sensibility, hearing and sight, and their respective sensory projection areas meet in specific parts of the cerebellar cortex, from which efferent fibers arise and terminate in the reticular formation of the medulla oblongata, and that the region of this cortex into which somaesthetic sensibility terminates is also the region which inhibits tone via the reticular formation. The inhibition rather than the facilitation of tone seems to be dominant in the precentral motor cortex; whereas facilitation as well as inhibition is the effect of the cerebellar cortex upon the reticular system.

Extrapyramidal motor systems stem from the whole precentral motor cortex. Magoun interpreted the hypokinesis which resulted from a high midbrain lesion of the reticular system as the loss of the extrapyramidal facilitory systems. And Wagley[46] found that cutting the ventrolateral funiculus in the monkey was followed by a peculiar reluctance to move, not a paralysis. The great

pyramidal system to which, for years, has been allocated our capacity for volitional acts needs the facilitory support of extrapyramidal systems, the inhibition and facilitation of tone, part of which stems from the frontal lobe itself, whereas part is contributed by the cerebellum through a long-looped-multineurone circuit, and part via the reticular formation. The afferent arcs which control the complexity of purposeful voluntary movement in skilled performance are not confined to those which spring from terminals within skeletal muscle and joints. For the aim which skilled performance realizes is not an achievement of the precentral motor cortex alone, with its intercortical connections from the parietal lobe. The interpretation of distance, the meaning of the object sought, and that part of the control of the manipulation dependent upon sight seem to be the contribution of the occipital lobe.

In skilled performance directed toward a given end, the innervation of the muscles of the leading extremity takes place in a given order. The initiation of a movement, made by the contraction of the prime movers, is aided by the contraction or tonic innervation of the cooperating muscles, by fixation of the more proximally lying, or even on occasion by the more distally lying muscles, as well as by the contraction or relaxation of the antagonists. In such movements the "fusilade" innervation of the cooperating extremity is as important as the differential use of musculature of the leading extremity. The precentral motor cortex makes possible the stopping of a movement at any degree of contraction and starting it again at another degree necessary to follow through to the chosen end.

Posture must not only be maintained in an easy and natural way to free the hand for manipulation, but adjustments to the next phase of the movement must also be anticipated. Stereotyped movement patterns and flexor or extensor synergies, such as those which survive removal of the precentral motor cortex, can be split and utilized in parts or as a whole.

Through its intercortical and subcortical relationships the precentral motor cortex becomes the chief executor of the cerebral mantle. And its integrity in an intact nervous system allows us to express the increment of what we have learned through the maintenance of the interactivity of thalamus and cortical tissue.

A new concept of the activity of the cerebral cortex springs from the mutual interrelation of that cortex and the reticular system by way of the thalamic recruiting nuclei and the thalamic association nuclei, together with the motor activity, with which they share cortical space; the very richness of the afferent systems, which penetrate the old reticular formation, suggests that the altertness which characterizes the conscious state is largely determined subcortically. Many neurosurgeons have discovered that lesions near the third ventricle and rostral brain stem are accompanied by unconsciousness; whereas large lesions, restricted to the cerebral cortex, may show "a modification of the content of the conscious state, but not its loss"[47]. Cairns and others[48], in 1941, reported a patient, who had a cyst in the third ventricle. As the cyst filled and expanded, the patient became mute and lost facial expression and the ability to initiate any kind of active response; but immediately following the tapping of the cyst, speech and interest in the world about returned.

French[49] outlined the postmortem findings in 5 patients in whom profound changes in consciousness were maintained from four to nine months. In 3 of them the lesion had destroyed a large part of the reticular formation in the rostral brain stem; in the fourth, the lesion was more cephalad, destroying the more rostral part of the dorsal thalamus; but in the fifth, the entire cerebral cortex was involved. Apparently, even incomplete injury to the reticular activating system or its cortical projections makes an otherwise intact cerebral cortex helpless and therefore unable to continue its customary integrative activity.

I have also given the anatomic data upon which rests the interpretation of the thalamocortical looped circuits as reverberating. I have outlined the long, multineurone circuits in which a part of the output becomes input and is known as a feedback circuit. I have shown you that skilled performance is subject to control at many levels — peripheral, spinal cord, cerebellar and intercortical—and is therefore illustrative of a far more complex servomechanism than the governor on Clark Maxwell's steam engine[50]. Interesting and fundamental as

this translation of qualitative data into electrical terms is, it is still obligatory to use the older methods for interrogating the nervous system and to know the physiology and the anatomy of a region as well as the electrical activity which accompanies physiologic states.

Although contact with the world outside ourselves is limited by the end-organs which explore it, once they have been set in action by the waves of air about us or by contact with an object within it, our very consciousness is maintained, not by the activity of the cerebral cortex itself, but rather by that of the old reticular system which alerts it. And the reticular system alerts this cortex not in the sensory projection areas, nor yet in the motor area, but rather in those areas whose activity seems capable of storing past experience. We are alerted, apparently, to the significance of the object in the posteriorly lying association areas, and, anteriorly, to the affective quality of the object in those regions which provide for rejection or alert attention to it. Dare I say that our learning is primarily dependent upon the reception given the object by the activity of the prefrontal division of the frontal lobe?

"We live," consciously, because the activity of the cerebral cortex is maintained by the reticular system; "and move," because of the support given the pyramidal system by the extrapyramidal systems, which facilitate and inhibit tone and movement; "and have our being," particularly through the activity of the prefrontal region, made possible by its subcortical interrelationship with the thalamic recruiting system and the reticular formation. For now we see the activity of the great cortical mantle in part, and know it only in part, but we look forward to the time when the work of our students shall bring us face to face with the meaning and the significance of the activity of this great tissue which is indeed ourselves.

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Streptomycin and PAS are not bacteriocidal but bacteriostatic. They do not cure or eradicate the disease. Relapses occur and reconversion of sputum from negative to positive is frequent. They have markedly improved the prognosis of tuberculosis but have not controlled it.—John H. Skavlem, M.D., The W. Va. Med. J., December, 1952.

OBESITY AND THE PUBLIC HEALTH

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The medical literature of recent years has witnessed such a spate of papers on obesity that a review of the subject becomes a formidable undertaking. Let us briefly note some of the generally accepted conclusions and then proceed to discuss certain aspects of the subject which are of particular interest to those engaged in public health work.

Obesity may well be the most serious nutritional abnormality in the United States today. It is estimated that one fifth of all persons over 30, or 15 million people, may be 10 per cent or more overweight.

Obesity in adults is associated with an increased mortality proportional to the degree of overweight. It appears to be an etiologic or predisposing factor in several important disease states. Prominent among these are derangements of the cardiovascular-renal system, but the list also includes diabetes and gallbladder disease.

Obesity imposes an added burden of considerable importance to health on the sufferer from many chronic diseases. Cardiac compensation is impaired, the hobbling effects of arthritis are increased, embolism and thrombosis following operation are more frequent, pregnancy involves increased risk, and asthma and bronchitis are more often fatal.

The obese person clings tenaciously to his overweight habitus. Reduction and the maintenance of a more normal weight are associated with difficult privations, and the tendency to regress is almost irresistible.

The basic cause of obesity is ingestion of food in excess of caloric needs. This tendency to overeat, the dynamic phase of obesity, may be a current problem with the patient or it may have been present in his more remote past. But the ultimate cause of the caloric imbalance, be it hereditary, psychogenic or metabolic, is not well understood. Indeed, it appears likely that overeating is the result of multiple factors.

The Diagnosis: Obesity and Overweight

In public health work, an accurate diag-

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nosis of the disease under consideration is of primary importance if our statistics, epidemiologic deductions, and control measures are to be valid. Obesity and overweight are not necessarily identical terms; this is particularly true in the central range of the weight distribution curve which includes the greater part of our population[1]. The term "overweight" implies a weight greater than some acceptable standard for sex, height, and age; "obesity," a body containing excess fat. As an example of this difference, Keys calls attention to the overweight athlete who is, in fact, lean, and his counterpart, the sedentary business man, who may not be overweight although he is definitely fat.

The diagnostic criterion of relative weight has been employed by most investigators, and the diagnostic term "overweight" should be used for those whose weight is found to exceed that given in the standard table. Unfortunately several standards of weight have been used, making it difficult to interpret and compare the results obtained in different investigations.

The weight table most frequently employed in American studies has been that of the Medico-actuarial Mortality Investigation[2], which has found its way into many textbooks, with or without acknowledgment of its source. Although published in 1912, the table is still useful[3]. A similar standard prepared for the Army was used by Levy and co-workers[4], and others. In both of these tables, standard weight for a given height increases with age, and no allowance is made for body build. Standards of "ideal" weights for height in men and women were prepared and published by the statisticians of the Metropolitan Life Insurance Company[5], and have received wide acceptance. Weights are given for individuals with "small," "medium" and "large frames," and the tables allow for no increase in weight with age, since it is believed that the health records are better in those adults who do not gain after the age of 35. A weight standard for Canadian adults, based on a stratified random sample of the population, has recently been published[6].

The term "obesity," in accord with its Latin derivation, denotes a disproportionately large fat content in the body[7]. Of the several methods available for predicting the fat content of the living human body, only one—the measurement of skinfold thickness—is suitable for application outside the research laboratory. Fortunately, this measurement appears to be highly correlated with the fat content of the body[3], and offers a great deal of promise for future investigations. Epidemiologic studies seeking to relate obesity to ill health will be more definitive if a distinction is made between obesity and overweight. The type of instrument used in determining skinfold thickness is of great importance, and before the technique can be applied generally to studies of obesity, it will be necessary to choose standardized body sites for the measurements and to establish norms for age, sex, and possibly other parameters. In this regard, it is fortunate that skinfold thickness, as well as weight, was determined in the Canadian survey[6], and that the results will soon be published.

Brozek and Keys have reported a study which illustrates the difference in the information yielded by measurements of relative weight and of body fatness[8]. Two samples of healthy men, all within the range of ± 5 per cent of standard body weight, were chosen from the subjects studied at the University of Minnesota. But the relative body fatness of the 37 men of college age (19-25) was notably less than that of 66 men aged 45-55. As estimated by body specific gravity, the proportion of the body weight attributed to fat was, on the average, 21.0 per cent for the older men and only 9.8 per cent for the college men; and the thickness of skinfolds of the abdomen, chest, and back was likewise approximately twice as great in the older men.

Prevalence and Distribution

Fundamental to the public health approach is the determination of the prevalence of ill health and the identification of the population groups showing high or low experience rates for the disease in question. Since such information is basic to the formulation of control measures, our ignorance in this regard with respect to obesity and overweight is distressing. Much quoted is the estimate, based on examinations for life insurance, that at least one fifth of our population aged 30 or more (about 15 million), are 10 per cent above their ideal weight, and that about 5 million of these weigh 20 per cent or more above the ideal[9].

I will quote a few examples of informa-

tion regarding a few subgroups within the population: In a nutrition survey in a rural county of central Tennessee, 17 per cent of 407 white adults and the same proportion of 183 Negro adults were overweight according to a clinical estimation of the amount of subcutaneous fat[10]. The rate for males of both races was 5 to 6 per cent, while that for females was 26 to 29 per cent. Two studies in North Carolina also concern the frequency of overweight in the rural south. In Wayne County in 1942-1943, 20 per cent of both white and colored adults were found to be 20 pounds or more overweight[11], while in Alamance County the proportions were 16.4 per cent for white and 19 per cent for colored adults[12].

Some 1,500 visitors to patients in the wards of the Bellevue Hospital in New York were observed by Wilens[13], who estimated that 25 per cent of the middle aged and elderly men and 60 per cent of the women in the same age category were frankly obese. In the course of a nutrition survey in Groton Township, New York, it was found that 28 per cent of 640 persons 10 to 79 years of age were 10 per cent or more overweight[14]. Multiphasic screening of a sample of 235,000 adults in the Atlanta area disclosed that 7 per cent of this population was 25 per cent or more overweight[15]. Unfortunately, the article does not give separate rates according to age, sex, and race. A study of the longshoremen of the San Francisco Bay area yielded some interesting figures regarding overweight[16]. These men were relatively old as compared with the average of employed men in the area; 57 per cent were between 45 and 64, for a median age of 49. Almost 70 per cent of the men tested were cargo handlers engaged in heavy and often dangerous manual labor. Nine per cent of 3,992 men examined were 40 per cent or more overweight, and 34 per cent were 20 per cent or more too heavy. These figures are less extreme, however, when it is noted that according to the table of ideal weights for men[5], the normal weight for a man 5 feet 9 inches tall would be 155 pounds, while 20 and 40 per cent overweight would be represented by 186 and 217 pounds. Overweight is usually reported to be less frequent among younger persons. Examination of 150,000 youths who sought employment in N.Y.A. work projects showed that 5 per cent were 25 per cent or more heavier than average for their age, sex, and height[17].

If, as public health workers, we are seriously resolved to undertake a program for the control of obesity or overweight, one of our first tasks will be to engage in systematic surveys which will define the extent of the problem and pinpoint the groups most affected. Such studies will require the use of standardized techniques for the diagnosis of obesity and overweight.

Mortality and Morbidity

Probably all who are interested in public health are familiar with the studies of insured men and women which have contributed so much to our awareness of the increased burden of mortality and morbidity that overweight imposes[9,18]. Our attention tends to focus upon the relationships between overweight and the cardiovascular diseases, since the latter are a principal cause of death among adults in the United States.

It should be noted that the insurance statistics relating obesity to mortality exclude from consideration any overweight persons with additional impairments which would entail extra premiums or rejection for life insurance[9]. Two studies in which the importance of these additional impairments may be assessed are available. Levy and co-workers[4] sought to establish criteria for recognizing those candidates for commissions as Army officers who would be poor risks from the standpoint of circulatory and renal diseases. A study of the medical records of 22,741 Army officers showed that overweight, transient hypertension, or transient tachycardia, each by itself increased the probability of sustained hypertension and of cardiovascular-renal disease. The presence of two of these abnormalities was of greater prognostic significance than any one alone; and when all three were found, the probability of the later development of sustained hypertension was 12 times as great as in controls; and of subsequent retirement with cardiovascular disease, 4 times that of controls.

Wilens studied the relationship between obesity and atherosclerosis in 1,250 autopsies at the Bellevue Hospital in New York[13], and found that advanced atherosclerosis was about twice as common in obese cadavers as in the poorly nourished. Since there is reason to believe that many of these persons

had lost weight before death, Wilens stated that his study would tend to underestimate the relationship between obesity and atherosclerosis. In regard to other predisposing factors, obesity appeared to be less important than advancing age or hypertension in promoting the development of atherosclerosis.

More than half the deaths from heart disease in men are attributable to coronary atherosclerosis, and a number of investigators have studied the distribution of body weight in persons who have suffered from coronary thrombosis[20]. Their findings are not uniform, and in some cases the methods used for evaluating the body weights are open to objection. It is clear, however, that while persons of all ages suffering from coronary thrombosis may possibly show a disproportionate number in the overweight class, the majority of sufferers have normal weight or less. One must realize in this regard that cardiovascular disease may be more common in obese or overweight persons even though obesity is not unduly prominent in sufferers from these diseases.

These considerations all point to the conclusion that obesity or overweight may well contribute to the development of morbid processes, while other factors are likewise of undoubted etiologic importance. Our attention should be directed toward the eradication of these other causes, as well as toward weight reduction and the prevention of obesity, if our efforts to improve the health of adults are to bear full fruit.

In a provocative editorial[1] Keys has raised the question of whether the total elimination of overweight in this country would result in much of a decline in our death rates for adults. A final answer is difficult to supply in the absence of more complete statistical information regarding the prevalence of obesity and overweight and the relation of either or both to mortality. Keys[21] reports some difficulties in generalizing on the basis of the experience of the life insurance companies which I feel sure are shared by many others. A large part of the answer to his question would appear to depend upon the prevalence in this country of obesity or overweight sufficiently marked to entail excess mortality. Even though the mortality of men and women 30-50 pounds overweight may be, say, one and one-half times that of persons of normal weight, if they compose only a small fraction, say 10 per cent, of our total adult population, their effect on the death rates for adults cannot be very large.

Although we are not in a position to promise a spectacular decrease in mortality by an efficient program of weight control, we can be quite certain that many lives will be prolonged and a great deal of ill health avoided. Obesity appears to be a contributing factor in a number of morbid processes. To the extent that they can be controlled or prevented, obesity and overweight deserve serious attention in public health programs.

Prevention or Treatment

The public health physician should pause to consider that reduction clinics are means of treating a chronic morbid state which might better have been prevented. Experience with other diseases has amply demonstrated that it is less expensive and more rewarding to engage in a program of prevention rather than of mass treatment. If our efforts are to take this direction, we must make further careful studies of obesity. We need to identify the most susceptible groups, the primary and contributing causes, the most frequent ages of onset, and to become more familiar with the natural course of the disease. Some of this information is available at the present time, but there are large gaps in our knowledge which call for further intense study.

Hereditary and cultural factors appear to play a role in the etiology and pathogenesis of obesity, and psychogenic stresses, personality, and interpersonal relations are also important. Space does not permit a review of our incomplete knowledge of the mechanisms controlling appetite or of the metabolic theories which have been advanced to explain the cause of overeating. More research is needed, and future studies should concentrate on subjects during the stage of dynamic weight gain. Statistical information regarding the frequency of obesity and overweight in different population groups would be of material assistance in selecting promising areas for study. Investigations should be carried out in several areas, since it seems probable that obesity has many causes, and the etiologic components may vary from group to group.

A thumbnail sketch of the course of the disease would include the following points: Its dynamic phase is marked by the symptoms of overeating and rapid accumulation

of body fat, but after a certain length of time the active process subsides and the individual returns to caloric balance. The disease is now static; the patient is overweight and obese, and the equilibrium between appetite and body weight is stubbornly maintained. More than one period of dynamic weight gain may occur in a given case. Attempts to reduce are usually short lived, and in most cases are followed by a more or less intense dynamic phase which restores the subject to his former degree of obesity. There is good reason to believe that we are dealing with a chronic disease, and that our treatment succeeds only to the extent of converting an obese patient into one potentially obese and requiring continued medical supervision. This may not be the invariable rule; a few persons seem to "learn their lesson" in the first period of treatment and succeed in avoiding obesity during the rest of their lives. I am afraid that this is rather the exception, but I hasten to add that there are no figures to serve as a guide, and a careful study of the therapeutic failures and successes might be most rewarding.

The majority of those attending our obesity clinics are sufferers of long duration. They are in the static phase of obesity, and the dynamic phase which initiated their disease occurred many years ago. It might be rewarding to direct more of our effort towards the treatment of obesity of very recent origin. Etiologic factors could be identified more readily in this group, and we would less often be attempting to modify long continued and fixed habits of life. If this group of recent sufferers is to be treated, it will be necessary to employ procedures for case-finding somewhat similar to those used in programs for the control of tuberculosis and the venereal diseases. Efforts to prevent obesity should be directed towards young adults in the population groups most subject to the disease.

Therapeutic Regimens

The fundamental and indispensable tool in the treatment and prevention of obesity is reduction of the caloric intake through diet. In order to make this regimen more satisfying and acceptable, different workers have varied the relative amounts of carbohydrate, protein and fat. Low calorie diets relatively low in fat were the accepted rule until recently. Now regimens are more varied. Pennington[22] restricts carbohydrate and salt narrowly, but allows protein and fat at will. On the other hand, Dole and co-workers[23] limit the protein intake to 35 Gm. a day, but provide their subjects with a surplus of carbohydrate and fat. Those who prefer the middle of the road will probably employ the calorically restricted, high protein, moderate fat, and low carbohydrate diet of Ohlson[24] and Young [25]. This regimen requires less revision of meal plans than others and appears to allay hunger and prevent fatigue and weakness. Since obesity is a chronic disease, the sufferer will need to restrict his food intake even after he has lost weight. Because of this, the diet should be moderate and permit the closest possible approach to customary meal patterns. Our aim is to educate both the patient and his appetite, and this process takes time.

It is usually easier to provide competent dietetic instruction than it is to gain acceptance of the treatment by the obese subject. Here, motivation is a matter of primary importance. Unless he is convinced that it is important, our patient will seldom lose much weight and will surely regress. In an unknown but possibly significant proportion of obese persons, overweight is associated with psychiatric difficulties and personality traits which seriously interfere with therapy. It is apparent that these subjects will require the skills of the expert in mental health.

It is important to note that attention to the customary three meals a day is not enough. Most successful reducing regimens impose on the patient a new daily routine which conflicts with his habitual behavior in many ways. He may be required to rise early and take a walk before breakfast, to divide his food equally between his three meals, and to avoid eating between meals even though appetite and social custom almost require this practice. He may be asked to give up salt and tasty foods, to avoid alcohol, to refrain from taking the very comestibles which appeal to him most. At parties, receptions, on social calls, during the coffee break at the office, before the television set, in the movies, and at the ball game he abstains while surrounded by a crowd of voracious nibblers, chewers, and drinkers. It is not surprising that treatment is most successful when it is individualized, sympathetic, patient, and when there is a large

element of transference between the therapist and the patient. Nor is it remarkable that only the highly motivated patient succeeds.

Summary

Obesity is one of the major health problems facing our adult population, and its control will call for our best and most persistent efforts. We must learn a great deal more about its prevalence and distribution, its causes and predisposing factors, the reasons for success or failure in treatment, and we should begin to devote more attention to prevention and to the treatment of early cases. It has been emphasized that our obese patients must be highly motivated if reduction is to succeed and be permanent. It can equally well be said that the health professions must be adequately motivated before significant results can be obtained in the control of obesity.

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HYPERTELORISM

A Report of Two Cases

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Hypertelorism is an easily recognized, but comparatively rare disorder of cranial structure. It was first described by Greig[1] of Edinburgh, who called attention to this previously undifferentiated cranial deformity in 1924. Up until 1938, 42 cases had been reported. Since that time comparatively few cases have been added to the literature. In this paper we wish to report 2 additional cases, and a possible third.

Hypertelorism has been classified by Reilly[2] according to four patterns: (1) A typical facies and familial tendencies, without mental defect; (2) typical facies and mental defect; (3) typical facies only; (4) typical facies and questionable family history, with beginning mental deficiency.

The condition is manifested clinically by an excessive spacing between the medial borders of the orbits. The nose is frequently broadened and flattened, with an uplifted tip. Radiologically, an abnormality of the sphenoid bone consisting of a great overgrowth of the lesser wings and comparative smallness of the greater wings is noted. It has been suggested that the deformity is the result of disturbances in the development of the cartilaginous part of the sphenoid bone, which is ossified at an earlier age than normal. However, other authorities have suggested an endocrine dysfunction, with special reference to the pituitary gland, but

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Figure 1

Figure 2

no evidence for this hypothesis has been satisfactorily put forward.

Case Reports

Case 1

A 7 year old girl was referred to this clinic because of difficulty in school. She was sent to us with a tentative diagnosis of Mongolism. When first seen by us on January 23, 1954, this child presented a quite distinctive appearance (see figs. 1 and 2). She had widely spaced eyes, which appeared at first sight to be proptosed. Protruding over her forehead were strands of thick, coarse hair.

On examination no gross neurologic abnormalities were noted, although the father complained that she had difficulty in walking up stairs; this observation could not be confirmed in our examination. It was noted, however, that she had difficulty with fine movements, and hopping on her right foot was impaired. She was right-handed.

The significant findings were confined to her head and neck. The most obvious abnormality was the wide divergence of the eyes, which resulted in monocular vision. She was unable to fix her eyes during an ophthalmoscopic examination, which revealed patchy, streaky depigmentation leading out from the optic discs. The base of the nose was extremely broad, the forehead somewhat protuberant. The mouth had many carious teeth and a high, arched palate. Her tongue was small and delicately pointed.

A Wechsler Intelligence Scale for Children was performed by one of us (W.B.M.), and an I. Q. of 54 was found, with a verbal scale of 66 and a performance scale of 50. This represented an optimally high grade defect, but funtioning on a slightly lower level due to interference of possible organic factors.

The family history disclosed that this child was the third born of 5 children. The first child had been a boy, born when the mother was 20. He was normal. The second child, a female, was delivered two months prematurely when the mother was 22. This child died 15 minutes after birth. The mother was not allowed to see the child because of a cranial deformity. Investigation of the hospital records, however, revealed that this child was a monster with a cranial deformity, no diagnosis having been made. Following this delivery the mother had an operation for an ovarian cyst. The patient in the present case was born four years later, and weighed 7½ pounds. The delivery was difficult and the child was not expected to live. She was somewhat slow in passing her normal landmarks and presented the picture described above.

Three years later the mother had another male child, who was normal. Two years after that she gave birth to her youngest child, a girl, who is the patient described in case 2.

Case 2

This child was seen in the clinic at the age of 2 years. She was suffering from obvious hypertelorism (see fig. 3). A physical examination disclosed widely divergent eyes, which showed signs of chronic infection, and coarse-textured hair. No other abnormalities were noted. She had passed all her normal

Figure 3

landmarks, and did not seem to be defective upon observation.

In summary, these two children had hypertelorism and both of them had abnormal hair texture. The older child had some depigmentation of the fundus. The younger child's fundi were not examined.

Comment

It is interesting to review these 2 cases and the possibility of the third in the deceased sister in order to question the validity of Reilly's classification. As far as could be determined, there were no other cases in the family, although a paternal niece had been a mental defective from birth. She, however, had no cranial deformity. In these 2 cases we have one patient manifesting the typical facies and mental defect, and one the typical facies only. The abnormaliy of the fundus and the coarse hair fit in with many of the congenital defects recorded in association with hypertelorism by other authors.

In this family one sees a strong tendency among the female members to this congenital defect, with none appearing in the males. This deformity has not been reported heretofore to have a particular sex incidence. Whether or not this is coincidental or whether there is an actual linkage with sex is not determined.

Summary

A brief discussion of hypertelorism is presented. Two cases in sisters, and a possible third in yet another sister have been reported. The possibility of sex as a factor in the appearance of this defect has been raised.

The authors wish to thank Dr. R. L. Craig of Highland Hospital for his advice and opinion upon the neurologic status of the patients.

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EARLY NORTH CAROLINA MEDICINE

THE MEDICAL JOURNAL OF NORTH CAROLINA, 1856-1861

DOROTHY LONG, M.A., B.S.L.S.

Not quite a hundred years ago, in August of 1858, the *Medical Journal of North Carolina*, first of the journals to be published by the State Medical Society, was born after a a long and difficult labor, to enjoy a brief and precarious existence. It appeared at a time when the troubled political scene was rapidly growing worse, and it is not surprising that the infant journal survived the outbreak of the Civil War by only a few months, its last issue being published in September, 1861.

The first definite step toward the establishment of a medical journal was made at the meeting of the society in 1856, when Dr. Newsom J. Pittman moved that the president appoint a committee to consider the expediency of such a venture. This committee reported that a monthly journal of as much as 128 pages per issue could be published for about $800 a year, and that a "modest but reasonable" salary for the editor would be $400. Since such a publication seemed feasible, the committee suggested that a prospectus be issued to the doctors of the state, and that the necessary number of subscribers be obtained[1].

In April, 1857, at the next annual meeting of the society, Dr. S. S. Satchwell, secretary, reported that he had issued such a prospectus, but that there were not enough subscribers to finance the publication. After further consideration, the committee urged the members of the society to continue their efforts, as a journal would serve to "unite and strengthen the regular members of the pro-

Reference Libarian, Division of Health Affairs, University of North Carolina, North Carolina Memorial Hospital, Chapel Hill, North Carolina.

fession, to develop the slumbering medical talent of the state, by causing deeper research, and closer and more attentive observation, and would give a higher character, if properly gotten up and conducted, to the profession of the state at home and abroad."[2] In 1858, at the ninth annual meeting, enough individual donations were secured to make the journal's first year possible, though it was issued somewhat irregularly. Its first editor was Edward Warren of Edenton, one of the most colorful figures among the doctors of that time.

1858-1861

The initial number of the journal began with an account by Dr. William R. King of the diseases of Franklin County, the beginning of a series of papers on the medical geography of the state. In addition to original articles, it contained bibliographic notices and reviews, selections from other journals, and an editorial devoted largely to the need for a medical journal in North Carolina and the editor's hopes for its success and usefulness. Later issues followed this same general pattern, and, though Dr. Warren occasionally complained of a lack of material, he seems to have received a reasonably good supply of original papers from doctors throughout the state.

That he himself kept well informed on current medical literature and events is shown by such items as translations from the works of Bernard and Brown-Sequard, a review of the first American edition of Gray's *Anatomy*,[3] and a report from *Lancet* on the medical use of hypnosis in France[4]. In October, 1858, Dr. Warren reviewed J. Marion Sims's *Silver Sutures in Surgery*[5]. Though he admitted the importance of the work, he was critical in some respects, and he commented on the egotism of the author—a trait from which the reviewer was not entirely free. In the same issue was a translation from Bernard, "On variations of color in the venous blood of glandular organs in connexion with their state of activity or repose."[6] Apparently Warren was particularly interested in Bernard's work, as the February, 1859, issue contained another translation, "On the influence of the two orders of nerves which produce variations of color in the venous blood of glandular organs,"[7] and there were still others in later numbers.

In 1860, when Warren went to Baltimore to teach in the University of Maryland medical school, the editorship was taken over by Dr. Charles E. Johnson, of Raleigh, and Dr. S. S. Satchwell, who was at that time studying in Paris. Dr. Johnson commented that they had "commenced our labors under the most discouraging circumstances and in perilous times."[8] The journal continued in much the same pattern as before, with the exception of letters from Dr. Satchwell describing his studies in Paris. An increasing emphasis on military medicine is noticeable in successive issues.

In the autumn of 1861, with its editors in active military service, the young journal quietly expired. In 1866, when the medical society resumed its meetings after the conclusion of the Civil War, a committee appointed to report on the journal found that its records and accounts had been lost during the occupation of Raleigh, but that the society owed Dr. Johnson about $300. The members of the committee added that under existing circumstances, they did not recommend any attempt to revive the publication.[9]

Edward Warren

All three editors of the *Medical Journal of North Carolina* were leaders in their profession, but Edward Warren was probably more widely known than either of his successors. His life has been the subject of several articles, including an excellent one by Dr. Hubert Royster[10], and Warren's autobiography, *A Doctor's Experiences In Three Continents*, written in the form of letters to Dr. John Morris of Baltimore, although it reveals a somewhat exaggerated sense of his own importance, is nevertheless an entertaining record of an eventful career. His father, William C. Warren, was also a physician, and Edward Warren interrupted his studies at the University of Virginia for a year at home as a student of his father. Following his graduation from Virginia he went to Jefferson Medical College, in Philadelphia, receiving his degree there in 1851.

After three years of practice with his father, Edward Warren went to Paris in 1854 for a year of further study. While there, he acted as correspondent for the *American Journal of the Medical Sciences*. In 1856, with an essay on "The influence of pregnancy on the development of tuberculosis," he won

the Fiske prize given by the Rhode Island Medical Society. In 1860, while he was professor of materia medica and therapeutics at the University of Maryland, Dr. Warren started the *Baltimore Journal of Medicine*. Shortly after the outbreak of the war, he returned to North Carolina, and held several positions in the Confederate army, including that of Surgeon General of the state. In 1863 he published a manual, *An Epitome of Practical Surgery for Field and Hospital.*

When the war ended, Warren returned to Baltimore, where he taught first at the Washington University medical school and later at the College of Physicians and Surgeons of Baltimore, which he helped to establish. Continuing his interest in medical journalism, he began the *Medical Bulletin* for the Medical and Chirurgical Faculty of the State of Maryland. A few years later, personal unpopularity following his testimony as an expert witness in a murder trial and grief at the loss of a son combined to influence his leaving Baltimore, and in 1874 he went to Egypt as chief surgeon on the general staff of the Khedive. Dr. Warren had a brief but adventurous experience in Egypt, during which a successful operation on the minister of war for the relief of hernia secured for him a promotion and the title of Bey. In 1875 he went to Paris to be treated for an eye condition, established a successful practice, and remained there until his death in 1893. Dr. Warren received decorations from a number of foreign governments and several honorary degrees, including one from the University of North Carolina. He was quite proud of his many honors, though he said once that he was tired of "chasing an empty shadow around the world."[11]

Charles Earl Johnson

Dr. Charles Earl Johnson, who edited the journal in 1861, was also born near Edenton, and graduated at the University of Virginia. He began the study of medicine as a pupil of Dr. Matthias Sawyer, and then went to the University of Pennsylvania, graduating there in 1834. Dr. Johnson began practice in Edenton, but moved to Raleigh in 1845 and spent most of his active life there. He was one of the founders of the State Medical Society, and was its president in 1856 and 1857. In 1861-1862 he served as Surgeon General of the state troops. Though he wrote on a number of different subjects, he was especially interested in mental illness, and probably his most important publication was the treatise, *The Question of Insanity and Its Medico-Legal Relations*, published in Raleigh in 1869. The memorial to Dr. Johnson in the medical society's *Transactions* indicates that he was an unusually successful and beloved physician[12].

Solomon Sampson Satchwell

Co-editor with Dr. Johnson was Dr. Solomon Sampson Satchwell. Following his graduation from Wake Forest College, Dr. Satchwell studied for a while with Dr. John Norcom, and then went to the University of New York, graduating from its medical department in 1850, but remaining in New York for another year and a half of study. Dr. Satchwell practiced in North Carolina until 1860, and then studied in Paris for a year. He returned to serve as a Confederate Surgeon, spending most of his time in the hospital at Wilson. Dr. Satchwell was president of the medical society in 1868, and was influential in organizing the state board of health. He died of typhoid fever in 1892, in an epidemic during which he is said to have treated patients after he was himself seriously ill[13].

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Donnatal Is Subject At Study

The effect of Donnatal (Robins) in functional disturbances of the gastrointestinal tract is the subject of a study directed by Dr. Lionel Marks, Toronto, Canada. One hundred cases of gastric spasm, duodenal spasm, spastic colon and irritable bowel are under observation. Patients are x-rayed, treated for three weeks with Donnatal, then x-rayed again by barium enema to determine whether the previous radiologic picture of spasm has changed. The study, to last six months to one year, is being made under a grant by the A. H. Robbins Co., Inc., Richmond, Virginia.

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"The prime object of the medical profession is to render service to humanity; reward or financial gain is a subordinate consideration. Whoever chooses this profession assumes the obligation to conduct himself in accord with its ideals."—Principles of Medical Ethics of the American Medical Association, Chapter 1, Section 1.

JULY, 1955

MEDICAL PRACTICES

Early in 1954 a Special Committee on Medical Practices, with Dr. Stanley R. Truman as chairman, was appointed by the Board of Trustees of the American Medical Association "to study the basic causes of fee splitting and other unethical practices that have been the subject of adverse publicity for the profession." This committee submitted a 72-page report, which was condensed by the Board in a statement published in the Organization Section of the *Journal of the American Medical Association* for May 7 (pages 49-50). The House of Delegates at Atlantic City, however, voted to have a copy of the full report sent to every delegate before the next meeting in Boston before taking action.

The recommendations of the committee are important enough to justify being presented editorially in this JOURNAL. No doubt our delegates will welcome expressions of opinion from members of the State Society.

The recommendations were preceded by the observation that "the committee found general agreement among doctors that there are greater financial rewards for the practice of surgery than for the practice of medicine. This discrepancy results from a low public evaluation of medical and diagnostic services as compared to high public evaluation of surgery. Recognizing this inequity, some surgeons willingly split their fees with other physicians in an effort to correct personally the resulting economic injustice . . . the restrictions of some surgical specialty boards work an economic hardship on the young surgeon. He has little or no referred work and is permitted to do no general practice . . . Arbitrary hospital restrictions on general practitioners, where they occur, create another set of economic hardships and frank hostility, particularly among those with special training in surgery that they are not permitted to utilize."

A four-point program was then recommended:

1. That a subcommittee of the Committee on Medical Practices be created to begin work on a relative value scale for the whole of the practice of medicine and surgery . . . The scale would be an indication for both doctors and the public of the proper relation between fees for various medical and surgical services. Its existence would be of interest to underwriters of health insurance and to all organizations, both medical and nonmedical, that are concerned with fee schedules. As it proved its usefulness and as more and more people became aware of it, the economic inequities that foster fee splitting would probably decrease.
2. That a program of public education on the value of diagnostic and medical work be fostered by the Department of Public Relations of the American Medical Association to increase public appreciation of nonsurgical work.
3. That the American Medical Association communicate to the specialty boards the findings of this survey, encouraging the boards to reappraise the value of the regulations, restricting the practice of those seeking or holding board certificates (with consideration of the removal of the restrictions in keeping with good medical practice).
4. That the American Medical Association continue to discourage arbitrary restrictions by hospitals against general practitioners as a group.

It is, of course, difficult to take an objective view of the problems facing the committee, and to escape being influenced by one's own interest. Even the surgeons, however, will admit that they are paid more

than are medical men for comparable preparation, diagnostic acumen, and responsibility. The "underwriters of health insurance and . . . all organizations . . . concerned with health insurance" offer the avenues of approach to a more equitable distribution of fees.

It is easy to understand that the proportion of surgical operations in a given number of policy holders in a year is far easier to calculate than the amount of medical illness to be expected. The very sensible suggestion has been offered by a surgeon that instead of charging for visits, medical men should, like the surgeons, fix the fees for various conditions that might be called medical emergencies. Examples that readily occur are myocardial infarction, massive gastrointestinal bleeding, diabetic coma, and cerebrovascular accidents.

Certainly the training required to become an internist is as long and arduous as that required to become a surgeon; the responsibility is just as great; and the demands made by the patient's relatives are greater.

The committee has a Herculean task before it, but its members are strong men. Let us hope and pray that more and more all doctors will look upon their profession as a great team, with every member determined to do what is best for the welfare of the patient.

* * *

GENERAL PRACTICE PRIOR TO SPECIALIZATION

For some time the feeling has grown that a medical school graduate who desires to be certified as a specialist should have, in addition to the training required in his chosen field, one or more years of experience in general practice. As a result of resolutions introduced in the House of Delegates in 1953, a special committee was appointed to study this question. The committee sent a questionnaire to 9,600 certified specialists. More than 90 per cent of those who had had experience in general practice prior to specialization, and 40 per cent of those who had not had such experience "considered it valuable training and recommended a year or two of such experience prior to specialty certification for all young doctors."

As a result of this study, the committee was convinced that at least a year of general practice would be very helpful to every specialist. It also recognized the obstacles to be overcome, but felt that the advantages were greater than the disadvantages. It recommended, therefore, that the Board of Trustees of the American Medical Association be instructed to enlarge the committee to 11 members and to provide it financial support for further study.

The first two recommendations of the committee showed that it really meant business:

> First, that the Board of Trustees be instructed to revise the Committee on General Practice Prior to Specialization to become an 11-member committee, to include 3 members of the Board of Trustees, 2 of the Council on Medical Education and Hospitals, 2 of the Council on Medical Service, and 4 members of the House of Delegates, 2 of whom are general practitioners, and none of the 11 members to be deans or full-time professors in medical schools or officers or directors of any specialty board;
>
> Second, that this committee be made responsible to the Board of Trustees and make periodic reports to it and this House.

The Reference Committee on Medical Education and Hospitals approved the report and referred it to the Board of Trustees for its consideration; so further developments may be expected.

Comments, whether pro or con, will be welcome in this JOURNAL, and will be passed on to the Board of Trustees or to the enlarged committee for consideration.

* * *

PHYSICIANS URGED TO REPORT USE OF SALK VACCINE

In this issue, under "Committees and Organizations," appears the suggested form for use in reporting vaccinations against poliomyelitis. Physicians will readily appreciate the importance of complying with the request of the State Advisory Committee on Poliomyelitis Vaccine to report individual experience with the Salk vaccine. Only on the basis of accurate follow-up data can the effectiveness of the preparation be evaluated and the decision to undertake mass inoculation be made.

The NORTH CAROLINA MEDICAL JOURNAL joins the committee in urging doctors to fill out the blanks promptly and accurately, in duplicate, returning one copy to the county health officer and keeping the other for their personal files. By so doing they may have a part in determining the ultimate effectiveness of the vaccine, which at present appears to offer the best hope of combatting poliomyelitis.

MEDICINE'S CHANGING FACE IN BRITAIN

In his presidential address to the Edinburgh Obstetrical Society[1] Dr. Clifford Kennedy questions the layman's "belief that he lives in an era when all is well with medicine." He asks, "Why so often is the medical father today relieved when his son . . . chooses a different career?" Dr. Kennedy says that he speaks only from the specialist's viewpoint, and "would not presume to speak of the worries which attend the general practitioner." He lists four factors in the change: the lengthened period of undergraduate training; the prolonged course of training required to become qualified as a specialist—estimated as some 15 years from the time he started medicine; the division of specialists "into four groups according to whether we have one of three grades of merit award, or none at all," and finally, the changed relationship between doctor and patient, and between patient and hospital. "Why," he asks, "Do we find headlines in the daily press featuring with ever-increasing frequency the actions brought by patients against the surgeon or against the hospital?"

Dr. Kennedy gives three main reasons for the increasing number of such claims:

1. "Free legal aid enables the individual to bring an action without risk of financial loss. If he loses his action, the expense is borne by the State; if he wins, he stands to gain."
2. There is the idea, all too prevalent, that nowadays the government rather than the doctor is being sued, for after all the doctor is merely the servant.
3. "In this present age, and in every walk of life, there is prevalent a desire to get something for nothing. . . . Such an outlook is being bred and fostered by the ideas behind the Welfare State."

Dr. S. Cochrane Shanks, president of the Medical Defense Union, stated that the number of claims for alleged medical negligence submitted to them in 1953 had increased by 80 per cent as compared with 1947. Compensation payments made by National Health Hospital Authorities, largely resulting from claims for damages by patients, have risen from 7560 pounds in the period July, 1948, to March, 1949, to 152,590 pounds in 1953.

In concluding his address, Dr. Kennedy asks whether, "with the enormous cost to the country which this new service entails, the patient has benefited in the essentials of treatment; whether the vast administrative wheel, which often grinds so slowly, might be made smaller and yet more effective; whether the endless committees, which force the public-spirited to spend almost as much time in the train as in the hospital, are so necessary; and whether great power and influence vested in the hands of a few satisfies our democatic ideals."

1. Kennedy, C.: The Changing Face of Medicine, British M. J. (April 30) 1955, p. 1045.

* * *

DUKE'S SILVER ANNIVERSARY

Twenty-five years ago this month the four-year School of Medicine of Duke University opened its doors. Within this comparatively short time in the life of an institution, Duke's influence in North Carolina and in the nation has been tremendous. It has added hundreds of graduates to the medical profession; it has contributed an amazing amount of high-grade research, and it has given high grade medical care to thousands of patients.

Dr. Edward L. Turner, secretary of the American Medical Association Council on Medical Education and Hospitals, in the principal address at the twenty-fifth anniversary "appreciation ceremony," paid high tribute to the "imaginative leadership" Duke Medical School has had from the beginning, which enables it now to celebrate "a silver anniversary of achievement justifying both youthful and mature pride."

Dr. W. C. Davison, who has been dean of the Medical School from the beginning, deserves great praise for the large place the school has made for itself. Not the least of his many fine qualifications for the job is his ability to select his faculty members and to inspire them to work with him and their colleagues as a great team.

Generally, patients fall into four groups: (1) the old patient with the old disease; (2) the old patient with the new disease; (3) the new patient with the old disease; and (4) the new patient with the new disease. In the first two groups it is so easy to be lulled into a sense of false security. We know all about the patient, but there is grave risk of missing some disease that has been present all the time or has developed insidiously and masked by the familiar cough, backache, or what have you. Infinite care to assure that no sign or symptom is missed is all important.—Editorial: Diagnosis in General Practice, Canad. M.A.J. 69:444 (October) 1953.

Committees and Organizations

Advisory Committee to the North Carolina State Board of Welfare

The Physician and Adoptions

In adoption, as in many other areas of life, the physician is often in a privileged relationship and needs therefore to be thoroughly familiar with applicable state laws. Couples wishing to adopt a child may seek the help of a physician in securing a child. Many an unmarried mother also turns to a physician to help place her child.

Physicians can be of help in both these situations through counsel and guidance drawn from their experience. However, every physician should have a clear understanding of the limits set by state law upon the participation by any person, the physician included, in the direct placement of a child for adoption with non-relatives.

No one, physician or lay person, is permitted under state law to participate in the direct placement of a child in a home with non-related adoptive parents. Neither is it permissible under the law to separate a child under six months of age from its mother except to persons related to the child.

Under the North Carolina law only the 100 county public welfare departments and the four private child-placing agencies licensed by the State Board of Public Welfare are authorized to handle adoptions. These agencies serve as the media through which couples wishing to adopt a child are helped to find a child suited to their situation and needs. Careful studies are conducted, both of the adoptive couple and of the child available for adoption, to assure a wise placement. Physical and psychologic examinations are given the child and social studies are made of the adoptive home.

Parentage of the child is kept confidential in the adoptive process in agency placements handled by public and private social agencies. This assures the fact that the mother cannot come into the picture in later years and do irreparable emotional damage to the child and to others who have come to love the child as though it were a natural child in the family.

It becomes, then, the course of wisdom and ethics for the physician to guide adoptive couples and unmarried mothers to the county department of public welfare or to one of the licensed child-placing agencies rather than to participate to any degree in a direct placement in violation of state laws. The physician can also aid by interpreting the wise provisions of this excellent adoption law to nurses, lawyers, and ministers, all of whom may otherwise find themselves drawn into participation in direct placements contrary to the law.

Allyn B. Choate, M.D.
Chairman

North Carolina State Advisory Committee on the Salk Poliomyelitis Vaccine

The North Carolina State Advisory Committee on the Salk Poliomyelitis Vaccine wishes to call attention to the following form for the use of physicians in reporting individual poliomyelitis vaccination. Physicians are urged to fill out duplicate blanks (obtainable through the county health departments), one to be returned to the county health officer for statistical purposes, and the other to be kept by the physician.

NORTH CAROLINA
***Physicians Report of Poliomyelitis Vaccination**

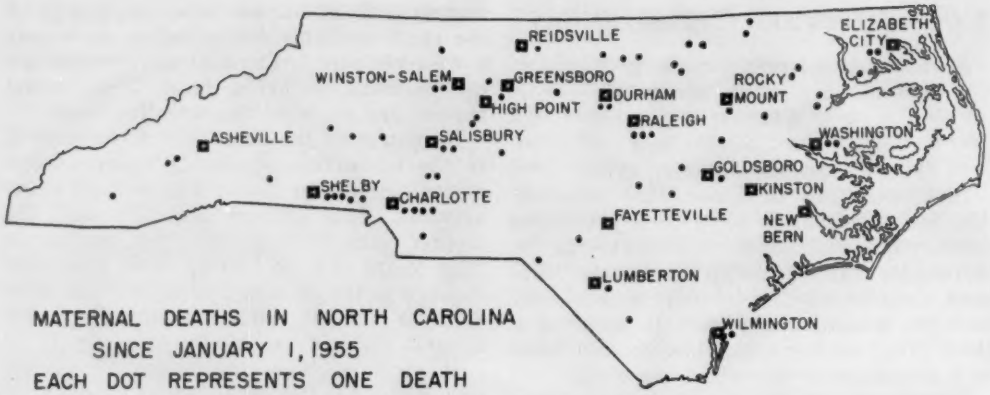
Name of Child: ..... Age: .....
(Last) (First) (Middle) (at last brithday)

Address: .....
(Number) (Street) (City or Town) (County)

Vaccination	Mo.	Day	Year	Vaccination Site	Manufacturer	Lot. No.	Remarks
First							
Second							
Third							

Physician ..... Address .....

***INSTRUCTIONS: Prepare in duplicate. Send original to County Health Officer. Retain copy for office use.**



BULLETIN BOARD

PRESIDENT'S MESSAGE

In this my first official message to my fellow members of the Medical Society of the State of North Carolina, I wish to express my grateful appreciation for your confidence in me and for the support of every member of the Society, upon which I am sure I can rely.

I agree with Elmer Hess, president of the American Medical Association, who in Atlantic City recently said, "Lightning strikes in funny places; I am living proof of this."

I accept the high honor conferred upon me with humility, but with a strong determination to serve you, and through you the best interest of the four and one-half million citizens in North Carolina, whose health and sometimes whose lives rests in our hands.

Your Society urgently needs the keen intellect, the boundless energy and enthusiasm, and the cooperation of every member. Every physician must be willing to work, to stoop down, pick up, and shoulder his load in support of his faith and belief in medicine.

As president-elect during the past year, and as president during the past two months, I have had the rewarding pleasure of discussing medicine not only with the leaders in our profession, but with leaders in other walks of life. These talks have always been informative and stimulating, though sometimes confusing. They have proved helpful in advancing and extending the science and art of medicine to all our citizens.

I have frequently been asked questions for which there are no easy answers. For example, just a few days ago I was asked to account for the many failures in medicine. My answer to this was another question: How does one account for the innumerable triumphs medicine has won for the benefit of mankind throughout the ages, and is still winning? Many still feel that medicine is not meeting its challenge. My answer to them is to ask how they would like to live in a community where there is no physician.

Medicine has not yet come of age. It still has much to contribute to the health and welfare of our fellow men. We can look forward with optimism and assurance to continued medical advances which will surpass those of the past.

The remaining potentialities of medicine require a look into the future. Two methods for doing this occur to me: One is the use of the crystal ball, which I am told requires considerable training, experience, and concentration. I decided on the other method—a process called extrapolation. If only slightly more accurate than the crystal ball, it is easier to use. It involves the projection of existing medical trends into the future, on the assumption that these trends will continue unchanged. If I am right in this assumption, it will not be long before the major causes of sickness, suffering, and death will be conquered or controlled through the unselfish efforts of the medical profession. Man-made accidents today stand second among all causes of death.

During my year of stewardship one of my chief objectives will be to bring to every member of our county societies (which are

actually the keystone of the American Medical Association) information about the important problems facing medicine and to solicit their help in solving these problems. The day is long past when a county society can be concerned merely with the scientific aspects of medicine. Interesting case reports by the members, or learned discussions by visiting professors of some new approach to an old problem which they themselves have actually not had time to use must be largely replaced on our programs by deliberate and voluntary discussions of the problems of organized medicine. The many other scientific symposiums, postgraduate courses, honor lectures, scientific journals, and the many meetings sponsored by our various specialty groups and by the North Carolina Academy of General Practice are entirely adequate for scientific advancement.

We in medicine must retain our leadership by giving all health agencies our full assistance, advice, cooperation, and participation. The health of the community as a whole should be the concern of those who care for the health of its individual members. To bring to the members of our county societies the many problems with which we are faced, and to gain their support in helping to solve these problems will be more effective than leaving them with our busy executive council and committees. Your officers, council, and committees need your good ideas.

As Dr. Hubert Porter has said: "Doctor, the medical profession is you; a burden shared by many is a light burden for all." To that I would add that "when public service ceases to be the chief function of our citizens and they would rather serve with their money than with their persons, the society, state and nation are not far from their fall."

To learn without studying, to be paid without working, to enjoy peace and security in medical practice without personal endeavor is to cheat both nature and reason. Inanimate nature has its parasites, but for a physician to be a parasite is to invite destruction.

Parasites in medicine become so for two reasons: (1) they seek safely and security without using their own faculties; and (2) they seek financial success without earning it. They resort to the old adage, "Let Joe do it." Like some civilizations, they become lazy and decide to live on the efforts of others. They have finished their course in the progressive school of medicine. They no longer accept discipline, make an effort, or maintain the struggle for existence. Their motto becomes "To live on others; the medical profession owes me a living." One who could have been an independent individual now becomes a dependent individual.

Any new set of conditions which enables an animal to obtain food and safety easily leads, as a rule, to degeneration, just as healthy active men degenerate when suddenly possessed of fortune, or as Rome degenerated when possessed of the riches of the ancient world. There is danger that the medical profession may become so surfeited with pleasures and riches and so puffed with pride that it will fall as Rome did.

There has never been a time when so many have had so much and so many have had so little. One half of the world goes to bed hungry every night.

The sins of omission have penalties just as have the sins of commission. There is a penalty for not sowing just as there is a penalty for sowing thistles. Man loses character not only because of the evil he does, but because of the good he leaves undone.

No true success was ever enjoyed without sacrifice and effort. What costs nothing amounts to nothing.

Babies are not the only ones who like predigested food. Unfortunately, some physicians like it too.

Nature gives man corn, but he must plant it. God gives man a will, but man must make right choices.

There has never been found any better philosophy than this: "To put the cross at the center of civilization of the good, the true, and the beautiful, and then take up your cross daily and follow me."

Recently I attended the American Medical Association's annual meeting in Atlantic City. I am more than pleased with what I saw and heard there. Guess what impressed me most! Busy doctors, important, busy practitioners of medicine, leaders in their communities, just like you. These doctors were giving selflessly of their time and energy without stint or scruple. I watched them spend long hours in the House of Delegates meeting and in the numerous committees, struggling with thousands of

problems in order to advance medicine and keep you free. My experiences there gave me a vast and profound respect for organized medicine and its leadership.

JAMES P. ROUSSEAU, M.D.

COMING MEETINGS

State and Regional

New Hanover County Medical Symposium — Wrightsville Beach, August 19.

Symposium on "The Treatment of Poisonous Snakebite Wounds" sponsored by the Wyeth Pharmaceutical Company of Philadelphia, the Bowman Gray Medical Society, and the Bowman Gray chapter of the Student American Medical Association—Amphitheater, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, August 22, at 7:30 p.m.

Tenth District Medical Society Fall Symposium—Memorial Hospital Medical Library, Asheville, October 12.

North Carolina EENT Society and the South Carolina Society of Ophthalmology and Otolaryngology, combined meeting—Columbia, South Carolina, September 12-14.

Postgraduate courses

Duke University Postgraduate Medical Cruise—aboard the M. S. Stockholm, November 23 - December 5.

*Postgraduate course—Morganton, September 21-November 2.

*Postgraduate course—Asheville, September 22-November 3.

Three-day course in surgery—Chapel Hill, November 28-30.

Eight weeks' general program in general medicine—Chapel Hill, October 5-November 23.

First District postgraduate course—January 11-February 15.

Industrial Health Program—February 9 and 10.

Postgraduate course—Statesville, March 13-April 17.

Program in general medicine—Chapel Hill, week of March 5.

Eight weeks' program—Chapel Hill, February 15-April 11.

*No meeting the week of October 12 because of Tenth District Medical Society Symposium.

National

Public Relations Institute—Chicago, August 31 - September 1.

Mississippi Valley Medical Society, Twentieth Annual Meeting—St. Louis, Missouri, September 28 - 30.

American Medical Writers' Association—Twelfth Annual Meeting—St. Louis, Missouri, September 30.

New York Academy of Medicine, Twenty-eighth Annual Graduate Fortnight (Problems of Aging)—New York City, October 10 - 21.

American College of Gastroenterology—Chicago, October 27, 28, 29.

NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

Duke University has just been awarded $116,000 in U. S. Public Health Service grants for research work by 16 Duke scientists, it was learned recently.

The Duke investigators and their projects are: Dr. William L. Byrne, associate in biochemistry, interconversion of phosophates; Dr. George M. Margolis, associate professor of pathology, study of changes in liver disease; Dr. Albert Heyman, associate professor of medicine, and Dr. George J. Baylin, professor of radiology, study of cerebral vascular disease; Dr. Joseph W. Beard, professor of surgery, avian leukosis virus; Dr. William G. Anlyan, assistant professor of surgery, search for specific gastric cancer-tissue antigen; Dr. R. Wayne Rundles, associate professor of medicine, serum proteins in blood cell malignancies.

Dr. Samuel P. Martin, associate professor of medicine, the role of enzyme systems in tuberculosis; Dr. Philip Handler, professor of biochemistry, nucleotide synthesis and sulfite oxidase; Dr. William J. deMaria, assistant professor of pediatrics, and Dr. Jerome S. Harris, professor of pediatrics, transfusion reaction in dogs; Dr. Goodall McChesney, associate professor of physiology, effect of cervicostellate ganglionectomy; Dr. Eliot H. Rodnick, professor of psychology, and Dr. Norman Garmezy, assistant professor of psychology, motivation and psychological deficits of schizophrenia; Dr. Norman Guttman, assistant professor of psychology, and Dr. Harry I. Kalish, visiting assistant professor of psychology, stimulus generalization and discrimination.

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Banthine is the most effective of newly-developed drugs for treatment of stomach-ulcer, and hexamethonium (C-6) is best for high blood pressure, a team of Duke University surgeons reported in a scientific exhibit at the American Medical Association meeting held at Atlantic City in June.

Of the eight newest drugs used for treatment of ulcer, only three—Banthine, Pro-Banthine, and Contranul—are sufficiently effective in pill form to produce good results, Drs. Keith S. Grimson, Frank H. Longino, and Benjamin H. Flowe pointed out. Banthine, introduced in 1950, still produces the best results, they said.

The exhibit is based on studies of more than 300 patients during the last five years at Duke.

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Dr. Barnes Woodhall, professor of neurosurgery, addressed the American Neurological Association in Chicago on June 14. His subject was "Stilbamidine in the Treatment of Tic Douloureux."

* * *

Duke University has just been granted $41,847 in American Cancer Society funds for support of research by five Duke scientists during 1955-1956.

In all, $53,513 has been allocated in North Carolina, including $11,666 for grants at Wake Forest College and the University of North Carolina, in addition to the $41,847 at Duke. The $53,513 total is the largest ever granted by the society in the state since the program was started 10 years ago.

Duke grants approved by the ACS Board of Directors upon recommendation of the Committee on Growth of the National Research Council are as follows:

Dr. Aubrey W. Naylor, associate professor of botany, for a study of the compound, maleic hydrazide, which has been found to prevent growth of some species of plants. Dr. Naylor is attempting to determine what processes are involved in the action of this chemical by testing its effect on plant enzymes and by studying known growth-promoting substances.

Dr. Joseph W. Beard, professor of surgery, for a project to determine the chemical constitution of a virus in fowl which is known to cause cancer-like disease.

Dr. R. Wayne Rundles, associate professor of medicine, for studies on abnormal proteins found in some cancer patients.

Dr. Seymour Korkes, associate professor of biochemistry, for work on reduction of constituents vital to cell growth through studies on the mechanisms by which certain enzymes react with these constituents.

Dr. Frank L. Engel, associate professor of medicine, for studies on how hormones influence the production of fat, growth and diabetes.

News Notes from the University of North Carolina School of Medicine

Dr. T. Franklin Williams, of the University of North Carolina School of Medicine, has been awarded a renewal of a postdoctoral fellowship by the Life Insurance Medical Research Fund, it was announced recently by Dr. Reece Berryhill, dean. The postdoctoral fellowship as approved by the Board of Directors of the Life Insurance Medical Research Fund will enable Dr. Williams to continue to obtain training experience in scientific research under the supervision of Dr. Lewis G. Welt, professor of medicine.

Dr. Williams has chosen as his field of study the excretion of water and electrolytes. This fellowship is one of several postdoctoral fellowships awarded by the Life Insurance Medical Research Fund to enable the holders, who are known as Life Insurance Medical Research Fellows, to become better qualified as scientific investigators through participation in actual research under expert guidance.

Dr. Williams came to the University last year and was appointed a fellow in the Department of Medicine. He graduated from the University of North Carolina in 1942 with a B.S. in chemistry, received his M.A. from Columbia University in 1943 and his M.D. from Harvard University in 1950. He is a native North Carolinian.

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Dr. Nelson K. Ordway, professor of pediatrics, and Dr. Judson J. Van Wyk, assistant professor of pediatrics, recently presented scientific papers at a combined meeting of the American Pediatric Society, the British Pediatric Association, the Society for Pediatric Research, and the Canadian Pediatric Society. Dr. Ordway's paper entitled "Reversible Respiratory Depression in Salicylate Intoxication" was co-authored by Dr. Robert W. Winter, assistant professor of surgery, and Dr. James S. White, assistant resident in pediatrics.

Dr. Van Wyk's paper was entitled "The Treatment of Thyroitoxicosis in Childhood with Thiouracil Drugs: Follow Up on 16 Cases." The meeting was held June 15-18 in Quebec City, Canada.

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Dr. Carl E. Anderson, associate professor of biochemistry and nutrition, attended a two weeks' conference recently at the Massachusetts Institute of Technology, Cambridge, Massachusetts. The conference was on biophysical and biochemical cytology and featured the application of newly developed biophysical and biochemical techniques in the study of the structure of biological materials and the role of this structure in determining biological function.

* * *

Dr. F. Douglas Lawrason, assistant dean of the University of North Carolina School of Medicine, has been appointed provost for medical affairs and acting dean of the Medical School at the University of Arkansas, it was announced by President John T. Caldwell during commencement exercises at the University in Fayetteville, Arkansas.

While the University of Arkansas has had a School of Medicine for some years, a new health center for the University is now being completed at Little Rock, consisting of a 500-bed hospital with Schools of Medicine, Nursing and Pharmacy.

Dr. Lawrason, who will assume his duties August 1, will be the chief administrative officer of the new center with full responsibility for the educational program and over-all operation, Dr. Caldwell said.

In addition to his assistant deanship, Dr. Lawrason has served as assistant professor of medicine in the University of North Carolina School of Medicine since August, 1953. Prior to that time he was on the staff of the Yale School of Medicine and with the National Research Council of the National Academy of Sciences in Washington, D. C.

For three years he was professional associate with the National Research Council, coordinating research and development for the National Blood Program.

From 1946-1948, Dr. Lawrason served with the U. S. Naval Reserve, including work at the Naval Medical Research Institute, Bethesda, Maryland, where he carried out studies in anemia, and in hematologic effect of atomic bomb radiation.

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Dr. William P. Richardson, assistant dean for Continuation Education, University of North Carolina School of Medicine, has announced the following postgraduate courses:

Postgraduate course Morganton, September 21-November 2

Postgraduate course Asheville, September 22-November 3

Three-day course in surgery—Chapel Hill, November 28, 29, 30

Eight-weeks' program on general medicine — Chapel Hill, October 5-November 23

Postgraduate course—First District Medical Society, January 11-February 15

Industrial Health program—Chapel Hill, February 9 and 10

Postgraduate course Statesville, March 13-April 17

Program on General Medicine Chapel Hill, Week of March 5

Eight-weeks' program—Chapel Hill, February 15-April 11

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Miss Ellen Anderson, medical technologist in the Department of Pathology, was elected recording secretary of the American Society of Medical Technologists at its Twenty-third annual convention held recently in New Orleans, Louisiana. Miss Anderson is a native of Greenwood, South Carolina, and received her training in medical technology at the Medical College of the State of South Carolina in Charleston. She received her baccalaureate degree from the University of North Carolina in Chapel Hill.

Miss Anderson is an active member of the North Carolina Society of Medical Technologists, serving as its president in 1954-1955.

* * *

Dr. John B. Graham, associate professor of pathology, University of North Carolina School of Medicine, was the guest speaker at the June meeting of the Alamance-Caswell County Medical Society. He spoke on "The Clinical Management of Hemophilia and the Hemophilioid States."

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Reservations Being Made For Postgraduate Cruise

By June 6 more than 100 had booked passage for the Caribbean-South American cruise, beginning November 23, under the sponsorship of the Duke School of Medicine, according to an announcement by Mr. H. H. Allen, president of the Allen Travel Service, Inc. Mr. Allen, who will be in personal charge, says that prospective passengers should make their reservations early.

A number of subjects will be studied during the postgraduate cruise. The faculty members will be: Dr. Wilburt C. Davison, James B. Duke, professor of pediatrics and dean of the School of Medicine; Dr.

Bayard Carter, professor of obstetrics and gynecology; Dr. Barnes Woodhall, professor of neurosurgery; Dr. J. Lamar Callaway, professor of dermatology and syphilology, and Dr. William Nicholson, professor of medicine and director of Postgraduate Education.

Although the cruise will be sponsored by the Duke School of Medicine, it will be open to the public, Mr. Allen said. He also stated that twenty-five hours of formal teaching will take place and will count toward the 150 hours of postgraduate study required of certain physicians every three years. A certificate of attendance at scientific meetings will be issued, he said, which can be used for purposes of income tax computation.

New Hanover County Medical Symposium

The following speakers will take part in the New Hanover County Medical Symposium to be held at Wrightsville Beach on Friday, August 19. Drs. R. Finley Gayle, president American Board of psychiatry and professor of psychiatry, Medical College of Virginia; Priscilla White, Instructor at Harvard and Tufts Medical School; Louis K. Diamond, professor of pediatrics, Harvard Medical School; William F. Meacham, professor of neurosurgery, Vanderbilt School of Medicine; and Briggs J. White, director of the Chemistry and Toxicology Laboratories, Federal Bureau of Investigation.

North Carolina State Board of Health

Dr. J. W. R. Norton, State Health Officer, served as presiding officer at the annual meeting of the Southern Branch, American Public Health Association, held in New Orleans, May 11-13. He also addressed the general session of the Louisiana Public Health Association on May 10 and a group of faculty members and students at the Tulane Medical School on the evening of May 13. On May 15 he arrived in Mexico City, where he joined the United States delegation to the Eighth World Health Assembly, which was already in session.

Edgecombe-Nash Medical Society

The Edgecombe-Nash Medical Society held its regular monthly meeting in Rocky Mount on June 8. The usual social hour was just prior to the meeting. Dr. John Chambliss was in charge of the program, and introduced as guest speaker, Dr. W. M. Alexander, of the Eastern Carolina Tuberculosis Hospital in Wilson, who discussed recent advances in the treatment of tuberculosis.

News Notes

Lieutenant Commander George F. Bond, MC, USN, of Bat Cave, who is now Submarine Squadron One Medical Officer at Pearl Harbor, was honored for his medical accomplishments Wednesday night, June 22, on Ralph Edwards' nationally televised program, "This is Your Life."

A Naval Reservist now specializing in submarine and deep sea diving medicine, Dr. Bond has previously received national acclaim as one of the outstanding country doctors in the United States. Before reporting to active duty with the Navy in November, 1953, he performed eight years of general practice in Bat Cave. He is the Southeast United States Regional Consultant to the American Medical Association Council on Rural Health, and has attended the annual meetings of this council for the past seven years.

Since entering the Naval Service, Dr. Bond has entered fields of medicine entirely different from those concerned with rural health. He has completed courses in deep sea diving, diving medicine, and submarine medicine. His work now is primarily with medical conditions and problems peculiar to submarines and those which confront divers.

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Dr. R. Leeves McCarty, with offices at 1515 Elizabeth Avenue in Charlotte, has announced the limitation of his practice to surgery of the anus, rectum and colon.

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Dr. John David Charlton has opened his office for the practice of allergy at 823 North Elm Street, Greensboro.

Emory University School of Medicine

Ground was broken this week for construction of a $1,000,000 medical clinic building at Emory University, another step in the growth of Emory as a great Southern medical center.

The five-story stucco and limestone structure will face Emory University hospital on Clifton Road, and is expected to be completed within a year. Nearby are the recently constructed Woodruff Memorial research building, and Aidmore Hospital, and tied in with Emory's medical development are the Glenn building at Grady Hospital, downtown headquarters of the medical school; the new Grady Hospital under construction, staffed by Emory; and a proposed Communicable Disease Center, a six-building project that will go up on a 15-acre tract on Clifton Road.

News Notes from the American Medical Associatoin

Public Relations Institute Planned

The 1955 Public Relations Institute of the American Medical Association will be held in Chicago August 31 and September 1 at the Duke hotel. The round-up of events will include discussions on grass roots activity in national legislation, basic public relations techniques, medicine in the magazines, and the individual's role as a public relations communicator. In addition, a session on forthcoming A.M.A. public relations activities and a showing of A.M.A. motion pictures will be held. James E. Bryan, author of "Public Relations in Medical Practice," will discuss his theories at a country-style luncheon, and special tribute will be paid to county societies at another informal luncheon session.

All medical society officers and headquarters personnel, public relations committee chairman, and Woman's Auxiliary personnel and officers are cordially invited to attend.

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New Guide For Medical Practice Units

A comprehensive planning guide on medical practice units, recently developed by the Sears-Roebuck Foundation after consultation with the American Medical Association, will be distributed in July by the Physicians Placement Service of the Council on Medical Service. This 80-page brochure provides a handy check list for physicians or community leaders who wish to establish medical practice units. Comparative advantages and disadvantages of building, re-modeling or renting are discussed. Also included are sample floor plans and complete information on the actual management of a practice after the unit has been completed. In addition, physicians will find the sections devoted to types of organization, division of income, retirement, and sickness and death benefits of value in their practice.

Copies of the brochure will be sent to medical societies having executive secretaries, all medical

schools and teaching hospitals. Because of the size and cost of the brochure, additional quantities will be made available to state and county societies for loan only to individual physicians.

* * *

A.M.A. Approves Five New Simplified Insurance Claim Forms

Approval has been granted by the A.M.A.'s Council on Medical Service to five new simplified insurance claim forms drawn up by a special committee of the Health Insurance Council. This committee which worked in collaboration with the A.M.A. Council's Committee on Prepayment Medical and Hospital Service included representation from all types of private insurance carriers. At the present time, a total of six simplified insurance claim forms have been approved by the American Medical Association.

The additional claim forms may be identified by the following symbols and titles: ID-1—Attending Physician's Statement, Accident or Sickness (Individual Insurance); IDS-1—Attending Physician's Supplementary Statement (Individual Insurance); GD-1—Attending Physician's Statement (Group Insurance); GDS-1—Attending Physician's Supplementary Statement (Group Insurance), and IPHS-1—Attending Physician's Statement, Accident or Sickness (Individual Hospital or Surgical). These five forms together with GS-1 (Group Surgical Expense, approved in 1954) are, in essence, adaptations of two basic forms—one designed for groups and the other for insurance underwritten on an individual or non-group basis.

It is hoped that the majority of the insurance companies identified with the Health Insurance Council soon will use these forms in their day-to-day claims administration and that physicians throughout the country will cooperate by completing the simplified forms promptly to facilitate the administration of claims.

* * *

Third Standard Nomenclature Institute

The third series of three-day classes covering the practical applications of the **Standard Nomenclature of Diseases and Operations** in the hospital or medical clinic will be conducted October 10-11-12 at A.M.A. Headquarters, Chicago. Included in the short course wil be lectures on the theory, basic principles and installation of the **Nomenclature** relating to the topographic section. Practice in coding also will be offered. Lectures on theory will be given by Adaline C. Hayden, C.R.L., associate editor of **Standard Nomenclature**, A.M.A., and on anatomy by Edward T. Thompson, M.D., chief of programs operations, hospital facilities, U.S. Public Health Service, Washington, D. C. Classes will be restricted to the first 100 registrants. Applications should be sent immediately to Mrs. Hayden at A.M.A. Headquarters.

* * *

A.M.A. Studies Absence of Workers For Congress Program

Plans are being made to include a one-day session on the general subject of absence due to non-occupational disability at the A.M.A.'s annual Congress on Industrial Health to be held next January in Detroit. A preliminary planning meeting was held recently with staff members of the Councils on Industrial Health and Medical Service and selected authorities in the field.

Course in Postgraduate Gastroenterology

The American College of Gastroenterology announces that its annual course in postgraduate gastroenterology will be given at the Shoreland in Chicago, on October 27, 28, 29, 1955.

The course will again be under the direction of the co-chairmen, Dr. Owen H. Wangensteen, professor of surgery of the University of Minnesota Medical School, who will serve as surgical co-ordinator, and Dr. I. Snapper, director of medical education, Bethel Hospital, Brooklyn, New York, who will serve as medical co-ordinator. Drs. Wangensteen and Snapper will be assisted by a distinguished faculty selected from the medical schools.

The subject matter, to be covered, from a medical as well as a surgical viewpoint, will include essentially the advances in diagnosis and treatment of gastrointestinal diseases and a comprehensive discussion of diseases of the mouth, esophagus, stomach, pancreas, spleen, liver and gallbladder, colon and rectum, with special studies of radiology and gastroscopy.

For further information and enrollment write to the American College of Gastroenterology, Department P.G., 33 West 60th Street, New York 23, New York.

National Multiple Sclerosis Society

The cause of multiple sclerosis, disease of young adults, is as elusive now as it was in 1835 when the disease was first observed and described, although several tantalizing clues are presently being explored, it was revealed at the eighteenth session of the Medical Advisory Board Meeting of the National Multiple Sclerosis Society, held at the Conrad Hilton Hotel in Chicago last month.

Fifteen progress reports were delivered by distinguished scientists in the field of multiple sclerosis. Invited guests included Dr. Douglas McAlpine of the Middlesex Hospital, London, England, and Dr. R. S. Allison of the Royal Victoria Hospital, Belfast, Ireland, who spoke on the incidence of multiple sclerosis in their respective countries, and made brief statements on the scope of multiple sclerosis research projects there.

Dr. Hans H. Reese, professor of neuropsychiatry, University of Wisconsin Medical School and chairman of the Medical Advisory Board, and Dr. Augustus S. Rose, professor of medicine in neurology, University of California, chairman-elect, presided. A summary report was delivered by Dr. Harold R. Wainerdi, medical director of the National Multiple Sclerosis Society.

The Society has supported 48 research projects, including five research clinics, at a total cost of $792,414, during the nine years since its founding. During that time, an average of 41 per cent of all funds has been spent on research programs. The only national voluntary health agency dedicated to combatting multiple sclerosis and allied neurologic diseases through its programs of research, rehabilitation, patient service and clinics, the Society is presently seeking a minimum of $2,000,000 to meet these needs.

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Dr. Hugo Wolfgang Moser, postgraduate investigator in internal medicine and biochemistry at the Graduate School of Arts and Sciences, Harvard University, has been appointed the first research fellow of the National Multiple Sclerosis Society, according to an announcement by Dr. H. Houston Merritt, professor of neurology, Columbia University, and chairman of the Society's Fellowship and Scholarship Committee.

The appointment is the first made under the recently inaugurated fellowship program of the Multiple Sclerosis Society, and supplements the national society's program of research grants, which are awarded to investigators working on specific projects.

American Board of Clinical Chemistry

The American Board of Clinical Chemistry, Inc., held its annual meeting at Henry Ford Hospital, Detroit, May 20-21, 1955. Three clinical chemists, who successfully passed the examination given by the Board last October were certified: Sol. I. Dulkin, Lawrence C. Kier, and Otto E. Lobstein. The total number of certified clinical chemists is now 241.

A complete Directory of Certified Clinical Chemists may be obtained by writing to the Secretary-Treasurer, Dr. O. H. Gaebler, Henry Ford Hospital, Detroit 2, Michigan, and will be sent without charge to hospital departments or other laboratories which engage in clinical chemistry.

Clinical chemists interested in being certified should also write for the Instructions to Applicants for Certification. In order to be considered for admission to the next regional examinations, which will probably be held during October, 1955, candidates should file their applications immediately.

The Board elected the following officers for the coming year: Marschelle H. Power, president; Clarence W. Muehlberger, vice-president; and Oliver H. Gaebler, secretary-treasurer. Other present members of the Board are: Joseph W. E. Harrisson, Arnold E. Osterberg, William A. Wolff, Warren M. Sperry, Harry Sobotka, Robert M. Hill, and Albert L. Chaney.

United Cerebral Palsy

Forty-six medical research and professional training grants totaling $395,000 have been approved by United Cerebral Palsy as the spring series of its 1955-56 research and training program, it was announced recently by Jack Hausman, U.C.P. national president.

Twenty-three of these grants, totaling $207,193, are for medical research, Mr. Hausman said. The remainder of the grants, amounting to $187,807, will be used to train professional personnel now badly needed to make treatment and other care available to more of the cerebral palsied. Included are fellowship and scholarship programs for physicians, physical and occupational therapists, teachers, dentists, vocational guidance counselors, and pediatric neurologists. Other training grants support summer workshops or year-round training programs at leading hospitals and universities.

New York Academy of Medicine

"Problems of Aging" will be the subject of the twenty-eighth annual Graduate Fortnight, to be held in New York City, October 10 to 21, under the sponsorship of the New York Academy of Medicine. All interested persons, non-medical as well as medical will be welcome as participants in this graduate symposium.

Further inquiries relative to the Graduate Fortnight should be addressed to the Executive Secretary, Committee on Medical Education, The New York Academy of Medicine, 2 East 103 Street, New York 29, New York.

Mississippi Valley Medical Society

The twentieth annual meeting of the Mississippi Valley Medical Society will be held at the Hotel Jefferson, St. Louis, September 28, 29, 30. More than 50 clinical teachers from leading medical schools will conduct this intensive postgraduate assembly, which will present the latest advances in medicine.

The program will include six panel discussions—Hypertension and Obstetrics (September 28), Geriatrics and Psychosomatic Medicine (September 29), Biliary Tract Diseases and G-1 Bleeding (September 30). The program will be conducted by leading clinical teachers from the medical schools in Columbia and St. Louis, Missouri, Chicago and Iowa City, in addition to clinicians from more distant states including Dr. Elmer Hess, president of the American Medical Association; Drs. Edward N. Cook, Richard M. Schick, Waltman Walters and Eric E. Wollaeger of the Mayo Clinic; Dr. Arthur C. Corcoran of the Cleveland Clinic; Dr. A. R. Currerі of the University of Wisconsin; Dr. Robert P. Cutler, of the U. S. P. H. S. Narcotic Hospital, Lexington, Kentucky; Dr. George A. Hellmuth of Marquette University, Milwaukee; Dr. Edward Henderson, Montclair, New Jersey, editor, Journal of the American Geratrics Society; Dr. William C. Menninger, Topeka, Kansas, of the Menninger School of Psychiatry; Dr. Wm. L. Watson, New York University—Bellevue Medical Center, New York; Dr. Arnold S. Jackson, President of the International College of Surgeons; and Dr. Wm. L. Valk of the University of Kansas.

All members oft he A.M.A. are cordially invited and urged to attend. (Non-members pay a $5.00 registration fee). There will be a large exhibit hall of technical and scientific exhibits. The twelfth annual meeting of the American Medical Writers' Association, "America's only Association Devoted to Improvement of the Written Word of Medicine," will also meet at the Hotel Jefferson, September 30, October 1. Further details of both meetings may be obtained from Harold Swanberg, M.D., Secretary, 209-224 W.C.U. Building, Quincy, Illinois.

American Medical Writers' Association

The twelfth annual meeting of the American Medical Writers' Association will be held at the Hotel Jefferson, St. Louis, September 30, followed by an Association sponsored Workshop on Medical Writing, October 1.

All physicians and collegiate graduates interested in medical writing, journalism or publishing are cordially invited and urged to attend the meeting and to become Association members. There is no registration fee for attending the meeting but nonmembers will pay a $5.00 registration fee for the Workshop.

American Urological Association

The American Urological Association offers an annual award of $1,000 (first prize of $500, second prize $300, and third prize $200) for essays on the result of some clinical or laboratory research in urology. Competition shall be limited to urologists who have been graduated not more than 10 years, and to men in training to become urologists.

The first prize essay will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Statler Hotel, Boston, Massachusetts, May 28-31, 1956.

For full particulars write the Executive Secretary, William P. Didusch, 1120 North Charles Street, Baltimore, Maryland. Essays must be in his hands before December 1, 1955.

American Dermatological Association, Inc.

The American Dermatological Association is again offering a series of prizes for the best essays submitted for original work, not previously published, relative to some fundamental aspect of dermatology or syphilology. The purpose of this contest is to stimulate investigators to original work in these fields. Cash prizes will be awarded as follows: Five hundred dollars, four hundred dollars, three hundred dollars and two hundred dollars for first, second, third and fourth place, respectively.

Manuscripts typed in English with double spacing and ample margins as for publication, together with illustrations, charts and tablets, all of which must be in triplicate, are to be submitted **not later than November 15, 1955.**

The manuscripts should be sent to **Dr. J. Lamar Callaway, Secretary, American Dermatological Association, Duke Hospital, Durham, North Carolina.** Those which are incomplete in any of the above respects will not be considered. Manuscripts should be limited to ten thousand words or less and the time of presentation of prize essay shall not exceed thirty minutes. In order to aid fair judgment, papers should be submitted under a nom de plume, with no information anywhere in the paper as to the institution or clinic where the work was done. Along with the paper by "John Smith" for example, a plain sealed envelope bearing the nom de plume, plus the full name and address of the author, is also submitted. Only after all the papers have been judged and returned to the chairman are the sealed envelopes open and the winners known.

Competition in this prize is open to scientists generally, not necessarily to physicians.

The award will be made by a committee of judges selected to pass on the essays by the Research Aid Committee of the American Dermatological Association and the decision of the judges shall be final. The essays are judged on the following considerations: (1) originality of ideas; (2) potential importance of the work; (3) experimental methods and use of controls; (4) evaluation of results; (5) clarity of presentation. This contest is planned as an annual one, but if in any year, at the discretion of the Committee and judges, no paper worthy of a prize is offered, the award may be omitted.

The results will be announced prior to January 1, 1956, and papers not winning a prize become the authors' property and will be return promptly. Any paper which wins a prize becomes the property of the American Dermatological Association.

The candidate winning first prize may be invited to present his paper before the annual meeting of the American Dermatological Association with expenses paid in addition to the five hundred dollar prize. Further information regarding this essay contest may be obtained by writing to the Secretary of the American Dermatological Association.

American College of Chest Physicians

The twenty-first annual meeting of the American College of Chest Physicians was held at the Ambassador Hotel, Atlantic City, New Jersey, June 1 through 5. More than 1,400 physicians and guests registered for the meeting. Fellowship certificates were awarded to 251 physicians at the Convocation ceremony held on Saturday, June 4. The following officers were elected for the year 1955-1956:

President—James H. Stygall, Indianapolis, Indiana.

President-Elect—Herman J. Moersch, Rochester, Minnesota.

First Vice President—Burgess L. Gordon, Philadelphia, Pennsylvania.

Second Vice President—Donald R. McKay, Buffalo, New York.

Treasurer—Charles K. Petter, Waukegan, Illinois.

Assistant Treasurer—Albert H. Andrews, Chicago, Illinois.

Chairman, Board of Regents—John F. Briggs, St. Paul, Minnesota.

Historian—Carl C. Aven, Atlanta, Georgia.

The twenty-second annual meeting of the College will be held at the Sherman Hotel, Chicago, Illinois, June 7 through 10, 1956.

Dr. George Curtis Crump, Asheville, serves as Governor of the College for North Carolina.

Tobacco Industry Research Committee

Claims that smoking causes "this thing or that" are generally not based on complete and accurate scientific knowledge, Dr. Robert C. Hockett, associate scientific director of the Tobacco Industry Research Committee said recently.

"Tobacco use has been both applauded and condemned for centuries without much being known about it," Dr. Hockett said. It is time that careful scientific investigation should replace folklore and tradition in such matters.

"The Tobacco Industry Research Committee is supporting scientific investigation into many phases of tobacco use and human health in order to get the facts," Dr. Hockett said. Considerable research is currently being sponsored into such subjects as: the effects of tobacco smoking on the heart and blood vessels of living volunteers; the influence on the blood flow of the skin and of the muscles of the body extremities; and the measurement of coronary blood flow in humans before and after intravenous injections of nicotine, and after smoking cigarettes.

Dr. Hockett said a primary objective of the Scientific Advisory Board, which develops and directs the research program for the Committee, is to further the search for the cause or causes of cancer, particularly lung cancer, and of cardiovascular diseases, and for the control of these diseases.

Attention also is given, he said, to research projects that will add to the understanding of tobacco smoke and its constituents, and of tobacco use by people.

Health Insurance Council

Nearly two out of every three men, women, and children in the United States now are protected by voluntary health insurance, the Health Insurance Council announced recently in releasing the findings of its ninth annual survey of health insurance in America, as of December 31, 1954.

"This survey shows," said Council Chairman John H. Miller, "that many more Americans now have more and better health insurance than ever before. Measured in terms of benefits paid out by insuring organizations in 1954, striking progress was made during the year. And the survey figures indicate continuing progress at rapid rates for the forseeable future."

Mr. Miller estimates that, by the end of this month, some 104 million persons will have voluntary health insurance against hospital expenses. About 89 million people will have surgical expense protection, and 50 million will have regular medical expense protection. These figures are based on conservative projections of the 1954 year-end data presented in the survey, Mr. Miller said.

(BULLETIN BOARD CONTINUED TO PAGE 278)

The Month in Washington

This Congress appears to have established a record for the introduction of medical legislation—but unless something unusual happens and happens fast there will be no record set for laws passed.

With the summer well along, and tentative adjournment just a few weeks off, Congress had not yet revived its interest in medical bills. Most of the measures that were offered in January and February, to the accompaniment of hopeful speeches by their sponsors, have been allowed to lie undisturbed in committee files. In come cases hearings were held, where persons and organizations vitally interested could give enthusiastic testimony. Very few bills indeed got farther than that in the first six months of the session.

One reason is the close balance in Congress, and the reluctance of either party to get behind bills offered by the other, and which might have appeal to the public in the 1956 election year. Another is worry over putting the federal government still deeper into the red in a year of prosperity, if not of boom.

Also, key committees for weeks were preoccupied with various bills on Salk vaccine, its control and its cost — weeks when the committees otherwise might have worked on, and possibly reported out, other less controversial health bills. A specific example is the Senate Labor and Welfare Committee. This committee was about ready to report out a House-passed bill for a national survey of mental health problems when it found itself deeply mired in the Salk situation. The mental health bill still is likely to be enacted, but the long delay didn't help much.

Another bill, early in the session regarded as about certain of enactment, calls for the establishment of a voluntary, contributory system of health insurance for federal civilian employees. After a year's study of the complications involved, a special task force prepared and made public the administration's program in January. The expectation was that a bill to carry out the plan would be offered in a few weeks at the most, and would be passed in a few months.

But it didn't work out that way. The administration decided that it coudn't press for these medical benefits (U.S. would pay about one-third of insurance premiums) until the extent of a general U.S. pay raise had been fixed by Congress. So it was June before this U.S. employee health insurance bill was even sent to Congress, and then the administration was in no rush to have it passed.

Troubles also beset the Defense Department's bill to extend the doctor draft act another two years. Although the extension was strongly opposed by both the American Medical Association and the American Dental Association, the House Armed Services Committee accepted the Defense Departments arguments and voted out the bill, 24 to 0.

Ordinarily such a committee vote would have sent the bill sailing on through the House and to the Senate. But not this time. Chairman Howard Smith (D., Va.) of the House Rules Committee lectured the Armed Services Committee and the Defense Department for not making an effort to solve the doctor problem by some other means. There was consequently a delay before floor action—not fatal, but a delay.

Some bills, once considered important, were effectively ignored by Congress. One was the Eisenhower-Hobby plan for reinsurance of health insurance groups, defeated last year. The administration tenaciously defended it, but the committees weren't enough impressed to schedule hearings during the first six months of the session.

The administration bill for federal guarantee of construction loans for hospitals and clinics stirred some Capitol Hill interest but no hearings have been held. Then came all the bills on polio vaccine, and this measure also was put on the shelf.

A bi-partisan bill for U.S. grants for constructing and equipping medical research facilities travelled about the same course: hearings, a high degree of enthusiasm from medical researchers, confidence that the plan would go through—then no more action.

For a time Senator Hill (D., Ala.), the key Senator on health bills, was determined to put through his bill for federal aid for building medical schools. When hearings were held the bill did not appear to arouse opposition from any quarter, yet it was pushed farther and farther to the rear.

From the Washington office of the American Medical Association.

BOOK REVIEWS

Casimir Funk: Pioneer in Vitamins and Harmones. By Benjamin Harrow, 209 pages, New York: Dodd, Mead & Company, 1955.

This biography, "Casimir Funk: Pioneer in Vitamins and Harmones," presents the first full length word portrait of this important scientist.

Born of a noted Polish dermatologist who influenced him profoundly, Funk pursued his studies in biochemistry in Berne, London, Paris, and other cities throughout the world. It was in Berne, at the ago of 20, that he did his first experimental work with harmones and became a Ph.D. This was a stepping stone to his famous studies on vitamins.

Funk toiled week after week, and month after month, developing polyneuritis in pigeons (comparable to beriberi in humans) by feeding them polished rice, administering rice polishings or ground yeast, and watching the polyneuritis disappear. By assiduous fractionation he finally obtained fractions A and B, fed a polyneuritic pigeon fraction A and saw it dying, gave it fraction B and watched it recover. On he went subdividing fraction B, discarding noneffective fractions, subdividing again and again until, at last, he obtained a concentrated substance which proved to be thiamine or vitamin B_1, the anti-beriberi factor.

Funk then announced that more than one specific substance existed and was shortly proven right. He invented the name "vitamine" for such substances—"vita" indicating life, and "amine" for amine which he wrongly believed it to be. It was only after thirty years of bitter opposition that the word "vitamin" (the final "e" dropped) was adopted and became an important part of nutritional history.

In 1936 Dr. Funk joined the U. S. Vitamin Corporation as research consultant and has remained with the company since. For this company he developed the production of nicotinic acid and niacinamide. For many years he has been "occupied with the broad field of cancer and its possible treatment."

Over 150 scientific papers by Funk and collaborators have been published throughout the world and listed by Harrow. This shy, gentle, charming man, "who has always strived to work for the betterment of humanity" is, at 71, "at the height of his intellectual vigor."

* * *

The Colon: Its Normal and Abnormal Physiology and Therapeutics. By M. L. Tainter and Thomas P. Almy, Conference Chairmen. Annals of the New York Academy of Sciences, vol. 58, pages 293-540, 1954.

The twenty-five assorted papers presented at this conference may be classified under four general topics. The first part consisted of five papers on the physiology and pharmacology of the normal colon. Clinicians will likely be interested in the summary of the normal and abnormal motility patterns of the colon as studied by the group at the Mayo Foundation under Dr. C. F. Code. The action of drugs on colonic motility is reported by Dr. Fred Kern using a similar balloon pressure recording technique. The use of barium techniques in studying the colon are discussed briefly but not illustrated. A panel discussion follows this section as for the other parts.

Our current theories of the etiology of constipation, obstipation and ulcerative colitis are discussed in the next part consisting of five more papers. A lengthy discourse on "Childhood Experience and Colonic Disorder" by Dane G. Prugh should interest not only pediatricians but any physician-parent.

The section on the pharmacology of the abnormal colon deals largely with laxatives. One article discusses antispasmodic therapy of the colon. A paper by Gray and Reifenstein judging the effects of corticoid therapy of ulcerative colitis by lysozyme titers and demonstrating the lack of effects of the so-called "anti-lysozyme" detergents was quite interesting.

The final section on therapy of colonic disorders is concerned mainly with constipation and ulcerative colitis. Certain specialized problems are covered such as the use of laxatives by the aged and constipation in institutionalized patients. Many different views of ulcerative colitis are presented throughout this whole symposium which reflect the interest this highly refractory condition attracts among clinical investigators.

Although there is a large amount of repetition among these papers the variety of viewpoints afford the reader a better sample of average medical opinion than would a review of the subjects by single authors.

Hypaque Found To Produce "Superior" Excretory Urograms

Excretory programs produced by Hypaque, a new contrast agent, showed a "nearly 100 per cent increase" in quality over a control group, according to a report in the **Bulletin of The Mason Clinic** (9:1, 1955).

Hypaque, manufactured by Winthrop-Stearns Inc., was given to 104 patients, while a similar number of cases received another contrast medium currently in wide use. It was found that 80 per cetn of the excretory urograms in the Hypaque series demonstrated "excellent" or "good" definition of the kidneys, compared with 38 per cent in the control group. Similar high quality diagnostic films of the ureters were obtained in 67 per cent of the Hypaque cases, compared with 38 per cent of the controls; and in 57 per cent of the bladders visualized with Hypaque, compared with 19 per cent of the controls.

There were no clinically significant objective or subjective reactions observed during the study with Hypaque, and particularly no significant vasomotor disturbances. The same "good results" with respect to quality and reaction incidence are cited by the authors in a subsequent study of 200 excretory urograms. Both studies, the article states, demonstrated Hypaque's "definitely superior diagnostic performance."

Winthrop-Stearns Names Medical Department Head

Dr. E. J. Foley, medical director of Winthrop-Stearns Inc., pharmaceutical manufacturer, has been appointed to the additional post of head of the medical department, succeeding the late Dr. Frank J. Stockman, it was announced by Dr. Theodore G. Klumpp, president.

Dr. Foley has been associated with the Winthrop organization for the last 22 years. In addition to his duties as medical director, he will also direct activities of the company's editorial department and medical library. Department heads associated with Dr. Foley are: Dr. Ernest Zander, associate medical director; Dr. Desmond Slevin, associate medical director; Mrs. Mildred P. Clark, chief medical librarian, and Miss Dorothy Stiebling, chief of the editorial department.

BULLETIN BOARD

(CONTINUED FROM PAGE 275)

Blue Shield Medical Care Plans

John W. Castellucci, executive director of Blue Shield Medical Care Plans has announced that the recently tried infringement suits in Texas and Mississippi, involving the well-known Blue Shield service mark and the shield symbol, have been settled. The validity of the Blue Shield service marks has been recognized. The defendants, who were using Blue Seal and White Seal, have each agreed to stop immediately any further preparation of sales material, or advertising of any kind, using these marks. Details of the Settlement are set out in Agreements filed with the U. S. District Courts in Austin, Texas, and Jackson, Mississippi where the cases were tried.

Instructional Course In Industrial Health

The Institute of Industrial Health of the University of Cincinnatti announces that the course of instruction in occupational skin problems will be given during the week of October 10-14. It will be presented by the Department of Preventive Medicine and Industrial Health, University of Cincinnati, in collaboration with the Occupational Health Program of the United States Public Health Service, and the Department of Dermatology and Syphilology of the University of Cincinnati. The objective of this course is to give physicians a greater understanding of cutaneous problems of occupational origin.

Physicians interested in attending the course should write for an application blank to Secretary, Institute of Industrial Health, Kettering Laboratory, Eden and Bethesda Avenues, Cincinnati 19, Ohio. Early application is advised since attendance will be limited.

Department of the Army

The Army Medical Service will conduct its postgraduate course on the medical care of atomic casualties at the Walter Reed Army Medical Center six times in the fiscal year beginning July 11, 1955, according to an announcement from Major Gen. Silas B. Hays, Army Surgeon General.

This is being done to meet the greatly increased demand from civilian physicians throughout the country for admission to the sessions.

Since a strict quota is maintained under an allotment system, applications for attendance from physicians or other qualified professional personnel must be made through their respective affiliations. In addition to the American Medical Association and the professional schools these affiliations include the United States Public Health Service, the Federal Civil Defense Administration, the Veterans Administration, and the Armed Forces medical services.

Reserve medical officers may apply through the chief of their military district to the Commanding General of the appropriate Army area.

Applicants are required to file their requests four weeks in advance of the course date desired. Dates for the six courses of the year are: July 11-16; September 12-21; December 5-14; January 30-February 8; March 19-28; and June 4-13. Lodging and travel expenses for those attending the course are borne by the individual or the organization he may represent.

Major General Silas B. Hays, Army Medical Corps, was sworn in as the thirtieth (30th) Surgeon General of the Army, June 1 in Washington.

General Hays, who has been Deputy Surgeon General for the past four years, replaces Major General George E. Armstrong whose statutory term expired May 31 and who is scheduled to retire from the Army in August of this year.

U. S. Air Force

The Surgeon General of the U. S. Air Force, Major General Dan C. Ogle, was the recipient of two high civilian awards within the month of June. During the convocation ceremony of the American College of Chest Physicians, held in Atlantic City on June 4, 1955, he was presented with an honorary fellowship in the College. On June 12, 1955, at Eureka, Illinois, during the centennial commencement of Eureka College, he was presented a centennial citation as being representative of outstanding achievement in his particular field.

Veterans Administration

More than 200 veterans in Veterans Administration hospitals have just been awarded $5,000 worth of prizes in the ninth annual nation-wide writing contest sponsored by the Hospitalized Veterans Writing Project, a volunteer organization, in cooperation with VA's Special Services.

Plans now are under way for the tenth annual writing contest for hospitalized veterans, to be held next spring. In the meantime, veteran-patients are encouraged to keep in practice through quarterly writing contests and through correspondence with volunteer Writing Aides.

Patients can get further information about next year's contest from their hospital or from Hospitalized Veterans Writing Project headquarters at 1020 Lake Shore Drive, Chicago.

U. S. Department of Health, Education, and Welfare

In a report released by Oveta Culp Hobby, Secretary of Health, Education, and Welfare, the Ad Hoc Interdepartmental Committee on Community Air Pollution urged a broad Federal program of research and technical assistance in air pollution problems.

The Committee recommended legislation authorizing such a program, and suggested the program be administered by the Department of Health, Education, and Welfare, with the assistance of a permanent interdepartmental committee on community air pollution. It said that "safeguarding public health is the most compelling reason for extending Federal assistance on air pollution."

The Committee, which was appointed by Mrs. Hobby last fall at the request of President Eisenhower, was composed of representatives of the Departments of Defense, Agriculture, Commerce, Interior, the Atomic Energy Commission, and the National Science Foundation, in addition to the Department of Health, Education, and Welfare. Dr. Leonard A. Scheele, Surgeon General of the Public Health Service, was chairman of the committee.

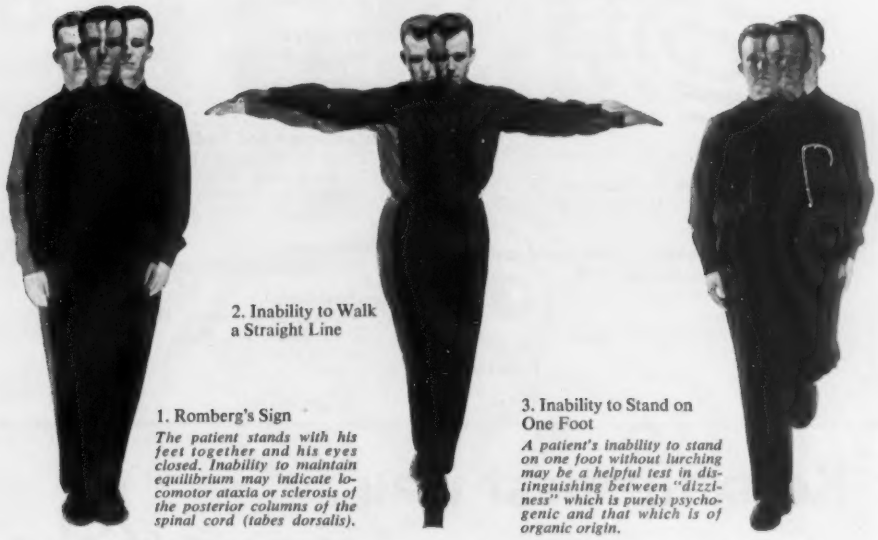
* * *

The Public Health Service, U. S. Department of Health, Education, and Welfare, has announced that, in accordance with Federal legislation enacted in August, 1954, it is assuming responsibility for health services for American Indians.

DRAMAMINE® IN VERTIGO

Notes on the Diagnosis and Management of "Dizziness"

II. False Dizziness



1. Romberg's Sign

The patient stands with his feet together and his eyes closed. Inability to maintain equilibrium may indicate locomotor ataxia or sclerosis of the posterior columns of the spinal cord (tabes dorsalis).

2. Inability to Walk a Straight Line

3. Inability to Stand on One Foot

A patient's inability to stand on one foot without lurching may be a helpful test in distinguishing between "dizziness" which is purely psychogenic and that which is of organic origin.

False dizziness is a sensation of sinking or lightheadedness which is often of psychogenic origin. It should be distinguished from true "dizziness" or vertigo[1] in which there is a definite whirling, moving sensation.

Unsteadiness, lightheadedness and similar manifestations of false dizziness[2] may be psychogenic or the result of arteriosclerosis, hypoglycemia, drug sensitivity and general metabolic disturbances such as anemia and malnutrition. Hypertension is often the cause of these symptoms.

Psychogenic dizziness probably originates at the highest brain centers. It may be described as a sense of uncertainty with occasional mild lurching but not to the point of falling. In these patients there is no nausea, no disturbance of vestibular pathways and otologic and neurologic examinations are negative. The sensation is unaffected by head movement. Symptoms usually disappear[3] with complete rest.

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1. Swartout, R., III, and Gunther, K.: "Dizziness:" Vertigo and Syncope, GP *8*:35 (Nov.) 1953.

2. DeWeese, D. D.: Symposium: Medical Management of Dizziness. The Importance of Accurate Diagnosis, Tr. Am. Acad. Ophth. *58*:694 (Sept.-Oct.) 1954.

3. Kunkle, E. C.: Central Causes of Vertigo, J. South Carolina M. A. *50*:161 (June) 1954.

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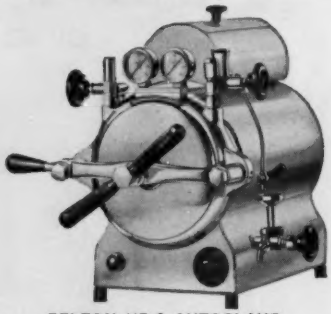

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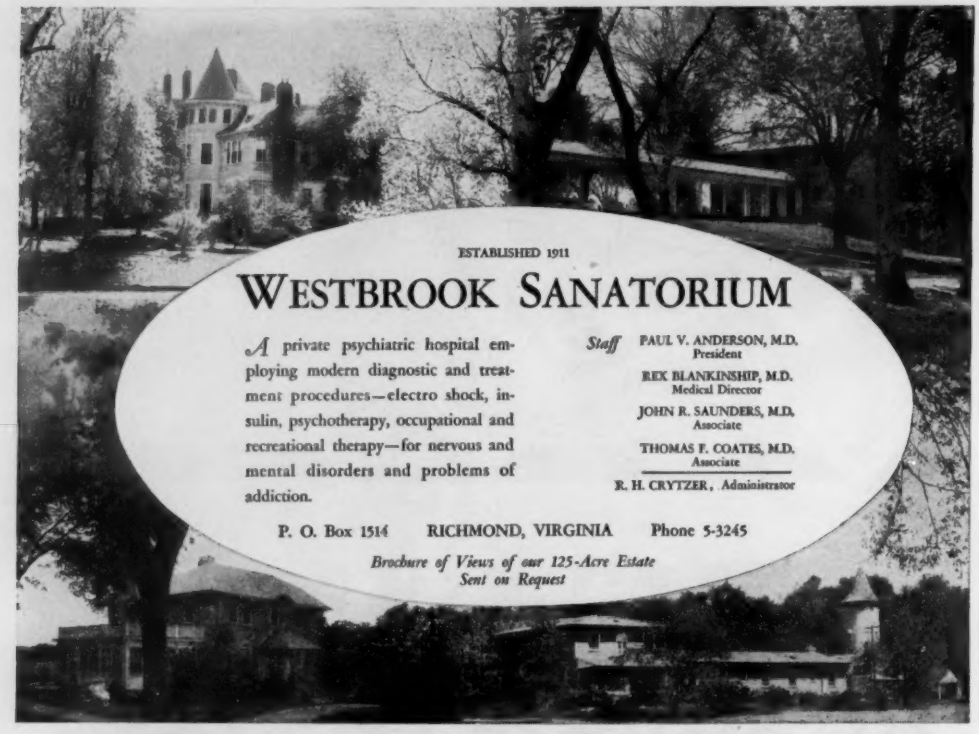
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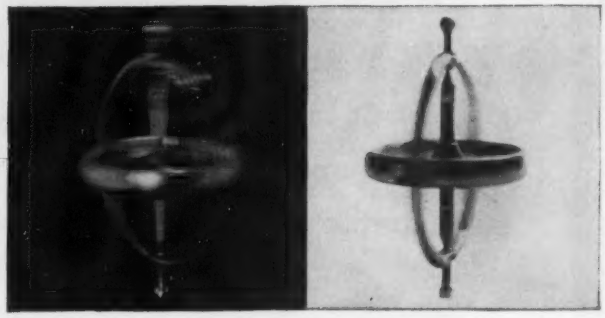

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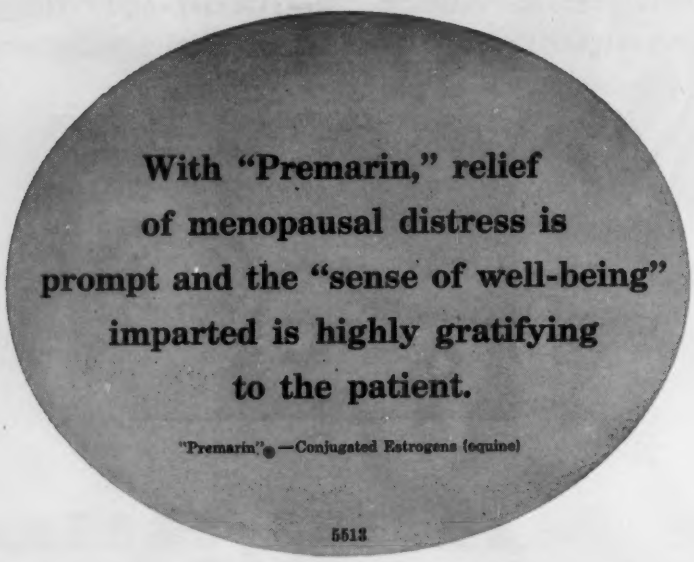

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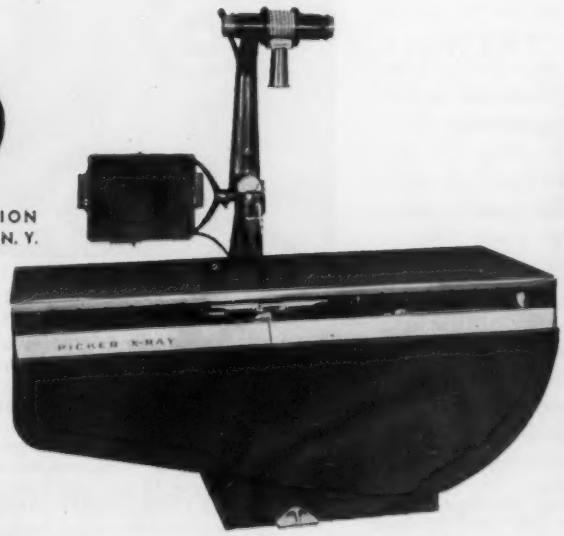

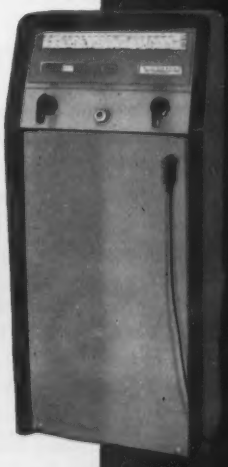

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[1]Dahlberg, A. C. and Loosli, J. K. Nutritive value of commercial ice cream. J. Am. Diet. Assn. *24*:20 (Jan.) 1948.
[2]Everson, G., Pearson, E., and Matteson, R. Biological availability of certain foods as sources of riboflavin. J. Nutr. *46*:45 (Jan.) 1952.
[3]Everson, G., Wheeler, E., Walker, H., and Caulfield, W. J. Availability of riboflavin of ice cream, peas, and almonds, judged by urinary excretion of the vitamin by women subjects. J. Nutr. *35*:209 (Feb.) 1948.

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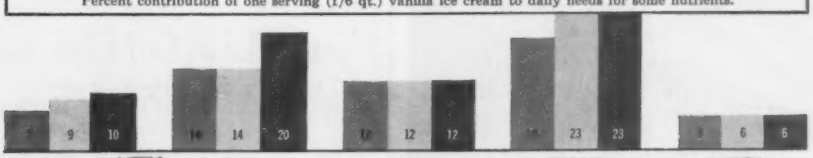

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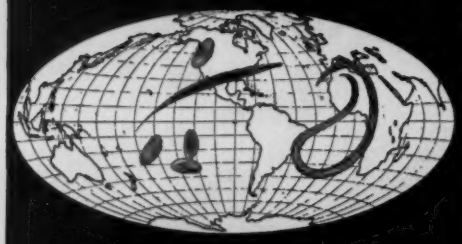

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Bumbalo, T., S., Gustina, F. J., and Oleksiak, R. E.: J. Pediat. 44:386, 1954.

White, R. H. R., and Standen, O. D.: Brit. M. J. 2:755, 1953.

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Brown, H. W.: J. Pediat. 45:419, 1954.

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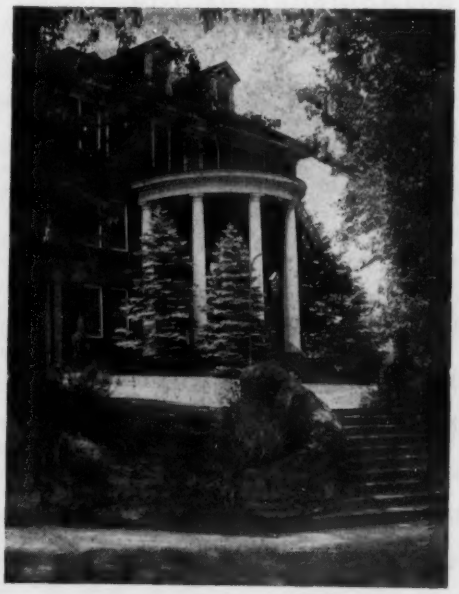

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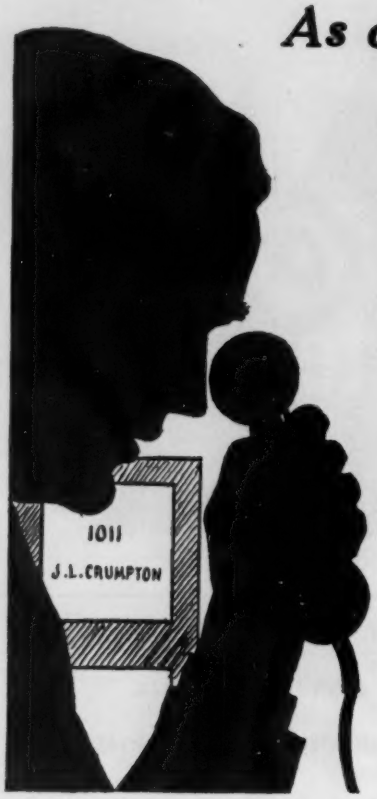

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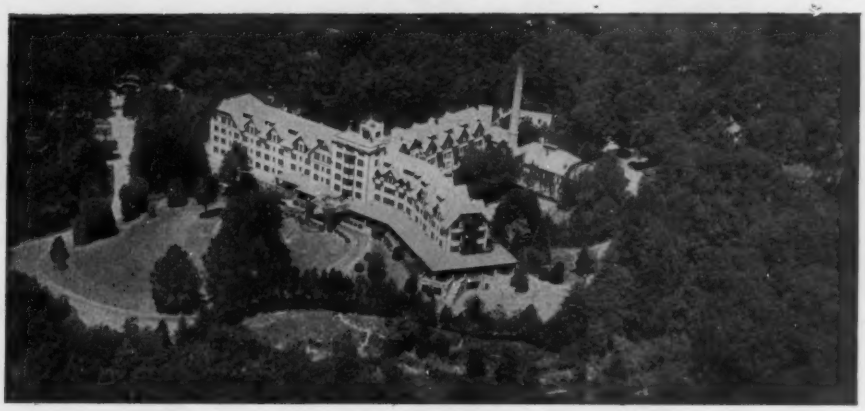

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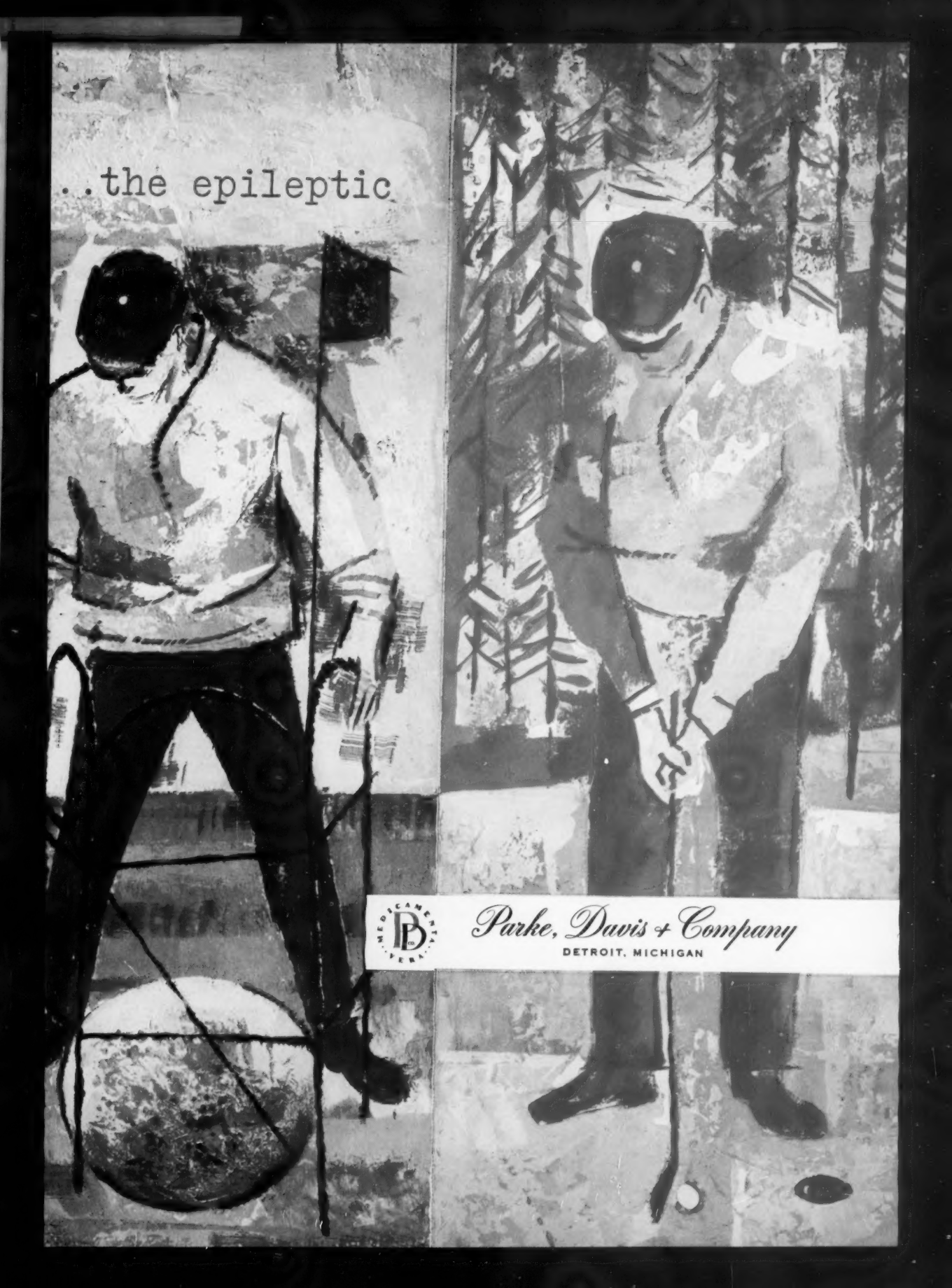
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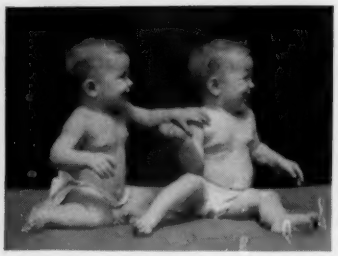

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(1) Jeans, P. C., in A. M. A. Handbook of Nutrition, ed. 2, Philadelphia, Blakiston, 1951, pp. 275-278.

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